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Biological & Medical Serials

The MODERN HOSPITAL

Vol. V *October, 1915* No. 4

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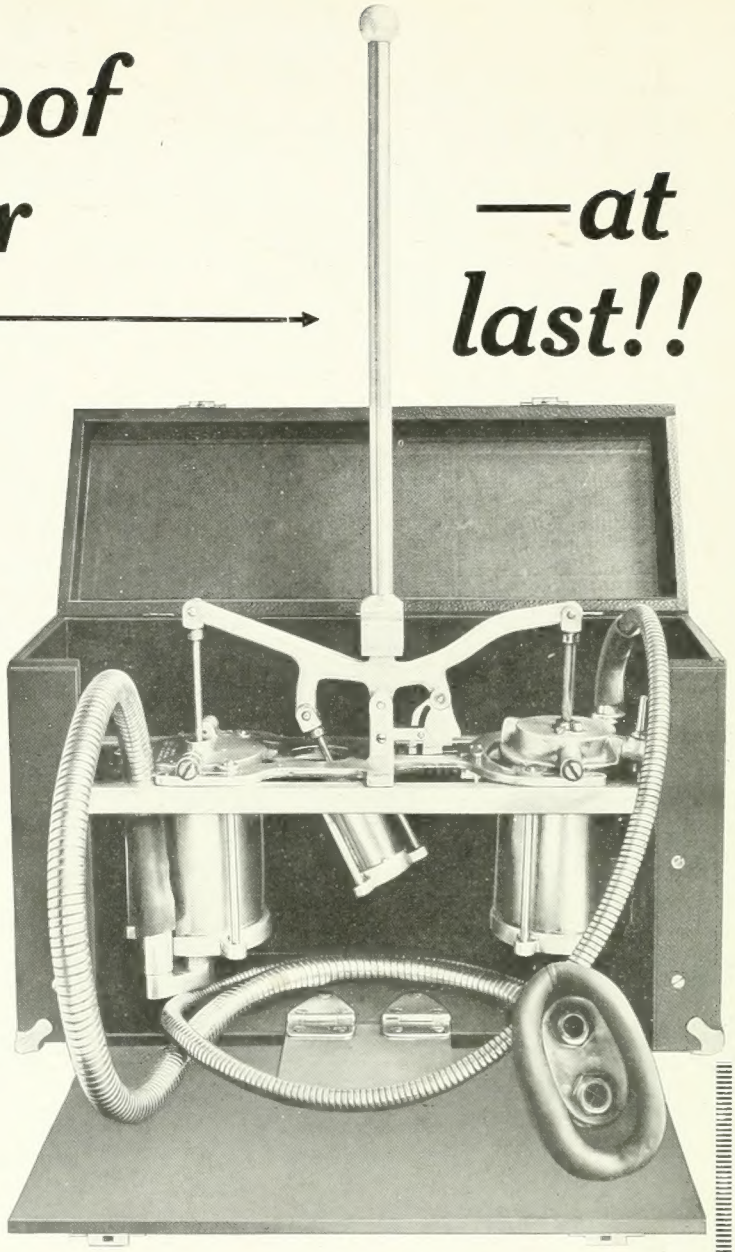
For subscription price and order blank see advertising page 34.

A Fool-proof Resuscitator

—at last!!

The Life Motor



THE LIFE MOTOR

AT last it is possible to safeguard against incorrect pumping in resuscitating a patient hurriedly. With the LIFE MOTOR the air volume is measured by means of an indicator. With the indicator set at a certain volume, it is impossible for the most inexperienced operator, no matter how hard he pumps, to affect the action of the LIFE MOTOR upon the patient, or to injure the lung cells by forcing in or withdrawing too large a volume of air. This is true of no respiratory machine but the LIFE MOTOR.

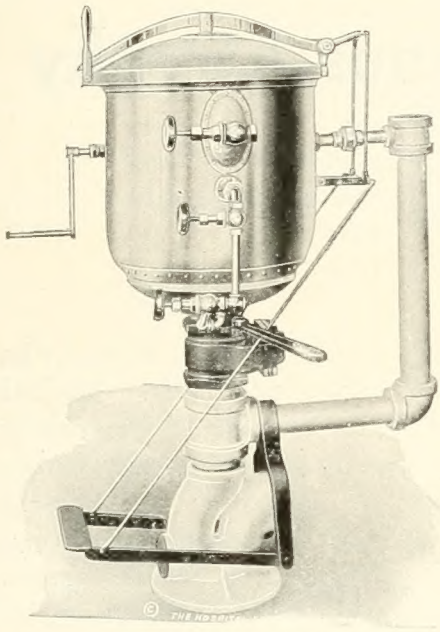
MOREOVER, the LIFE MOTOR allows spontaneous breathing by the patient even while the mask is on. It is not necessary, as with other machines, to lose valuable minutes and seconds by removing the mask to see whether natural breathing has been restored. With the LIFE MOTOR this can be ascertained in a moment by simply stopping the pumping.

We have more to tell you about the LIFE MOTOR
A postal from you will bring you valuable information

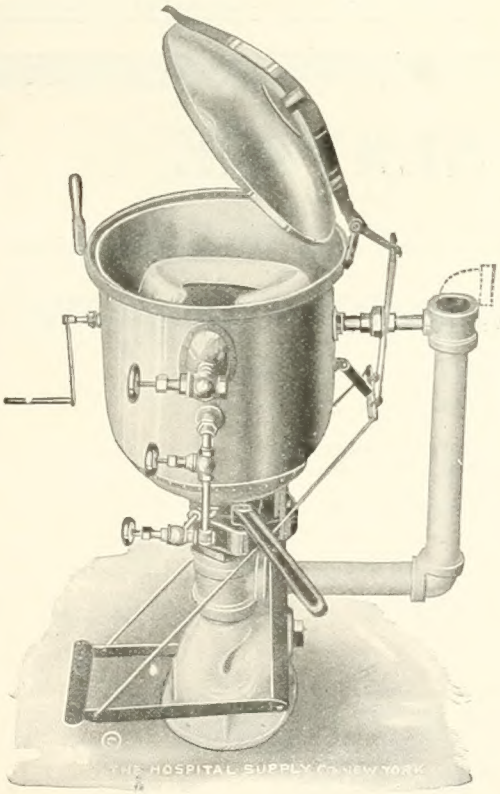
THE RESPIRATORY APPARATUS COMPANY

OSCAR CLEFF, M. D., President

122 South Michigan Avenue, CHICAGO



THE "CLIMAX" No. 3
As it appears when closed.



THE "CLIMAX" No. 3
Showing cover raised with bed-pan in position.

THE LATEST

"CLIMAX"

BED-PAN WASHER AND STERILIZER, No. 3

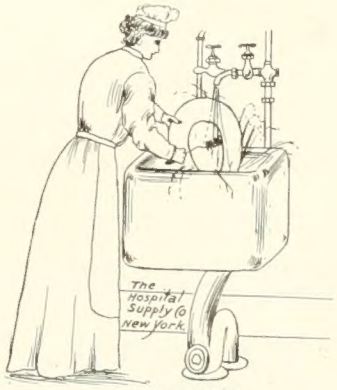
(Patents applied for)

FILLS A LONG-FELT WANT

AUTOMATICALLY
EMPTIES BED-PANS
WASHES THEM CLEAN
STERILIZES EITHER

Bed-Pan or Bed-Pan and Contents
IN A CLOSED VESSEL

NO ODORS **NO SPLASHING**



THE OLD WAY
Odors, Splashing, Infection.

THE NEW WAY
Empties and cleans in one minute, automatically, in a closed vessel.

THIS apparatus is epoch-making in overcoming one of the most disagreeable features of hospital work. In a short time no hospital will think of being without it.

Write for particulars

THE HOSPITAL SUPPLY CO.
55 Fifth Avenue, NEW YORK

NOTE—The George F. Geisinger Hospital, described in the September issue, was equipped by us.

Special INFANT FEEDING

Malnutrition-Marasmus-Atrophy

MELLIN'S FOOD
4 level tablespoonfuls

SKIMMED MILK
8 fluidounces

WATER
8 fluidounces

Analysis:

Fat	.49
Protein	2.28
Carbohydrates	6.59
Salts	.58
Water	90.06
	100.00

The principal carbohydrate in Mellin's Food is maltose, which seems to be particularly well adapted in the feeding of poorly nourished infants. Marked benefit may be expected by beginning with the above formula and gradually increasing the Mellin's Food until a gain in weight is observed. Relatively large amounts of Mellin's Food may be given, as maltose is immediately available nutrition. The limit of assimilation for maltose is much higher than other sugars, and the reason for increasing this energy-giving carbohydrate is the minimum amount of fat in the diet made necessary from the well-known inability of marasmic infants to digest enough fat to satisfy their nutritive needs.

MELLIN'S FOOD COMPANY, BOSTON, MASS.

LABORATORY SERVICE

One of the Most Important Factors in Successful Treatment

The Laboratory will often permit a positive diagnosis before clinical symptoms are well defined.
Your Laboratory Service should be maintained at as high a point of efficiency as the other integral parts of your Hospital.

WHY NOT AVAIL YOURSELF OF THE SERVICES OF THE **CHICAGO LABORATORY** FOR YOUR DIAGNOSTIC WORK

All Serological Tests Now Reduced to $5.00

Wassermann Test controlled by Noguchi or Hecht-Weinberg methods.
Complement Fixation Test for Gonorrhea.
Abderhalden's Sero-Diagnosis of Pregnancy, Cancer, Dementia Præcox.
Lange's Colloidal Gold Test for differential diagnosis of Spinal Fluid.

PATHOLOGICAL EXAMINATION OF TISSUES . . . $5.00
AUTOGENOUS VACCINES 5.00

This Laboratory is prepared to offer all types of Laboratory Service for diagnostic purposes, and can assure you accuracy and efficiency from our staff of experienced workers in this field.
Write us for details of special arrangements for Hospital service. Containers and culture media furnished.

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CHICAGO LABORATORY
CLINICAL ANALYTICAL

25 East Washington Street **CHICAGO, ILL.**

RALPH W. WEBSTER, M. D., PH. D., Director of Chemical Department.
C. CHURCHILL CROY, M. D., Director of Bacteriological Department.
THOMAS L. DAGG, M. D., Director of Pathological Department.

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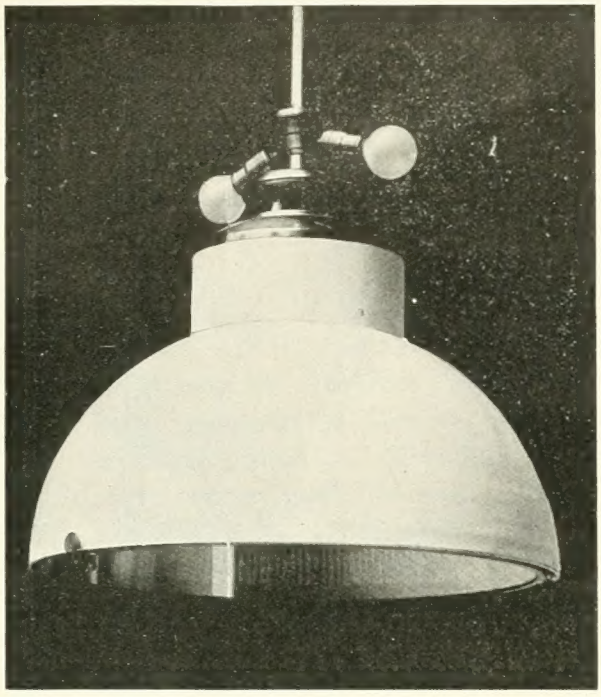
SAFETY
OPERATING LAMP



PROVIDES

Intense, uniformly distributed light.

A mixed light approximating daylight in quality, enabling colors of tissues to be judged accurately.

Ventilation, removing heat from the head of the operator.

POWERFUL EMERGENCY GAS LIGHT
IN THE LAMP

Available in an instant in the event of the failure of the electric current during the operation.

NO WAITING **NO MATCHES**

No groping in the dark for makeshift emergency light.

YOU KNOW THAT ELECTRIC CURRENT DOES FAIL AT TIMES. ARE YOU PROVIDED FOR THE EMERGENCY? IF NOT, YOU NEED THIS LAMP.

HOSPITAL DEVICES CO.
95 River Street Hoboken, N. J.

K. T. & K. supplies more ware to hospitals than any other domestic pottery supplies.

Good China is of the greatest sanitary importance in every hospital.

K.T.&K.
S—V
CHINA

Established 1854

This is the oldest and best known pottery in the United States. Wherever scrupulous cleanliness and sanitation are desired the K. T. & K. Semi-Vitreous China is the favorite.

We make a specialty of hospital china, either for wards or dining rooms; and also of individual tray sets. This china is supplied in plain white, decorated or monogram styles. Write us and we will arrange to show you our line.

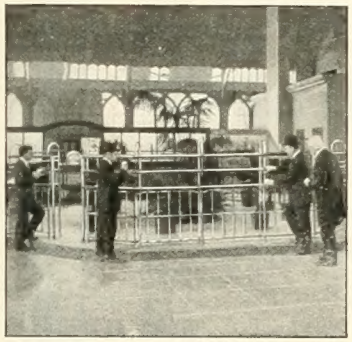
Knowles, Taylor & Knowles Co.
East Liverpool, Ohio

MOTT'S

SANITARY APPLIANCES, DRINKING FOUNTAINS, HYDROTHERAPEUTIC EQUIPMENT AND AUTOMATIC SAFETY DEVICES FOR CONTROL OF HOT WATER

Selected by the State of New York Reservation Commission for the New

Saratoga Baths, Drinking Halls and Fountains

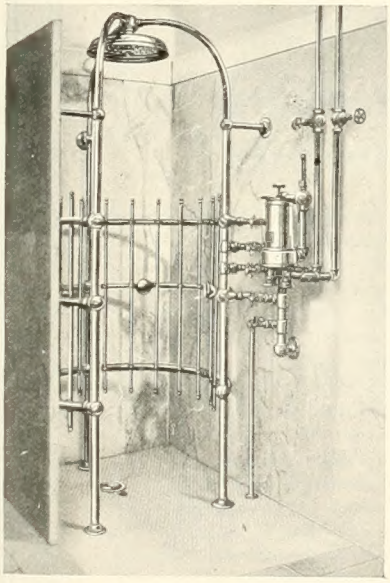


The new Kayaderosseras Bath Establishment as illustrated. Also New Lincoln Baths are equipped with Special Baths, as designed by Professor C. G. Anthony, consulting engineer. Also Hydrotherapeutic control apparatus of improved modified form, as approved by Dr. Simon Baruch, Professor of Hydrotherapy, Columbia University; Dr. Albert W. Ferris, Superintending Director for the Commission; and Louis F. Pilcher, New York State Architect. The Commission is composed of Frederick W. Cameron, Chairman; Frank N. Godfrey, George C. Van Tuyl, Jr.; Louis W. Noland, Secretary; Charles G. Lester, Counsel.

The J. L. MOTT IRON WORKS

Fifth Avenue and 17th Street, New York

Works at Trenton, N. J.



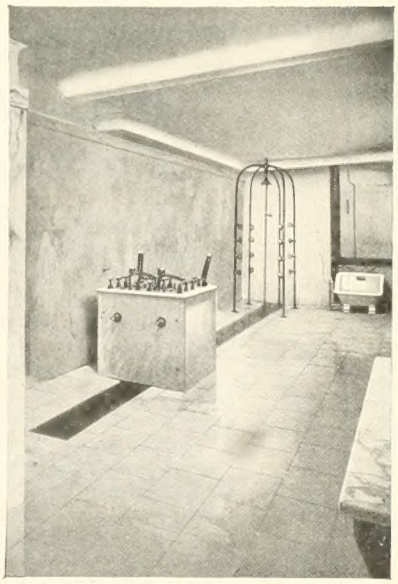
1828—Eighty-seven years of supremacy—1915

BRANCHES

Boston, Chicago, Philadelphia, Detroit, Minneapolis, Washington, St. Louis, Denver, San Francisco, Atlanta, Seattle, Portland (Ore.), Indianapolis, Pittsburgh, Cleveland, Ohio, Kansas City, Salt Lake City.

CANADA: Mott Company, Ltd., 134 Bleury Street, Montreal, Quebec.

Our staff of Hospital Experts and the Engineering and Designing Departments are available to give service to our customers.



The douches, electric light and hot air cabinets are of the type recommended by Professor Baruch for Neurovascular Training. Apparatus, Needle Sprays, and other fixtures of the Mott type are similar to those in above two illustrations. Write our Hospital Department for data relative to all requirements. Also our Ornamental Iron Department for catalogues and details of special Drinking Fountains.

Sunkist

Oranges of Perfect Quality

IT is, of course, imperative that all food served in hospitals be absolutely pure and that the quality be uniform and reliable.

Sunkist is the name that marks perfect quality—uniformity and reliability—*in oranges*, and these oranges, therefore, can be depended on by hospital superintendents as the best to serve regularly to patients.

Sunkist Oranges are picked every day the year 'round in California. They are never held in cold storage warehouses. Sunkist are always fresh.

And there is always a plentiful supply of Sunkist Oranges. They are sold by all good fruit dealers, so they may be purchased at any time from those through whom the regular supplies of food are now secured.

What the California Fruit Growers Exchange Does to Insure Uniformity

As to the purity of Sunkist Oranges:

Though some oranges are slightly marked by Nature, an *uninjured* skin is a necessity to prevent decay, and the California Fruit Growers Exchange, producers of Sunkist Oranges, take double care in this regard.

The fruit is picked by gloved hands so no marring will be done by sharp finger nails. Every orange is carefully washed before it is graded and sized. Throughout all the mechanical processes of handling the fruit in the packing houses extreme care is taken that no orange is roughly jostled. Then each Sunkist Orange is wrapped with sanitary tissue and the fruit is shipped by fast freight in refrigerator cars.

The California Fruit Growers Exchange is a strictly non-profit organization, having a membership of nearly 8,000 growers of oranges, lemons and grapefruit, and the sole aim of these growers in forming this organization is the production of better, cleaner, fresher, more uniform and more reliable fruit.

Scientific methods are adhered to from the time the trees are planted until the fruit is delivered to those who sell it in the markets.

Sunkist Oranges are of several different sizes, but all are of a certain standard in quality—the highest that skill and scientific care can develop in a section of the country that is naturally adapted to the production of citrus fruits.

California Fruit Growers Exchange
Dept. A-62, 139 N. Clark Street, Chicago

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Westinghouse Portable Ozonizers

Convenient regulating switch to adjust quantity of ozone desired
Plug and 10 feet of cord convenient to attach to nearest lighting socket
Rubber feet protect surface where ozonizer is placed

Intended to purify and deodorize the air—regulated by a switch on top of the ozonizer connected to four generating tubes—one tube in operation is sufficient for a room 10 by 20 feet square.

Westinghouse Electric & Mfg. Co.
EAST PITTSBURG, PA.

Grueby NON-SLIP Impervious FLINT Tiles for FLOORS

Safe—Sanitary—Silent—Indestructible

New Mayo Clinical Building. Ellerbe & Round, Architects.

The celebrated Drs. Mayo New Clinical Building at Rochester, Minn., is conceded to be the last word in hospital construction. The Grueby Non-Slip Floors installed therein over a year ago have given complete satisfaction. Additional installations have since been made.

Equally successful floors have been laid in U. S. Immigrant Receiving Station, Ellis Island, N. Y.; Jamaica Hospital, Jamaica, L. I.; Orthopedic Hospital, New York.

Grueby Non-Slip Impervious Flint Tiles are the ideal material for operating rooms, wards, laboratories, kitchens, halls.

The complete story in our Booklet, A 14.

Correspondence in regard to any tile problem for hospitals solicited.

GRUEBY FAIENCE AND TILE CO.
K and FIRST STREETS, BOSTON, MASS.
CHICAGO NEW YORK LOS ANGELES

Welch's is bottled sunshine

The fresh, tart-sweet flavor of Welch's gives a satisfaction that no other drink does. Nothing takes away the sick-room atmosphere quicker than

Welch's
Grape Juice

Physicians need have no hesitation in prescribing Welch's for their patients. It is just the pure juice of carefully selected, fresh Concord grapes—unsweetened, unfermented, no coloring matter added, no preservatives.

We shall be glad to send you further information and literature of special interest to the medical profession if you will write, addressing

The Welch Grape Juice Company, Westfield, N.Y.

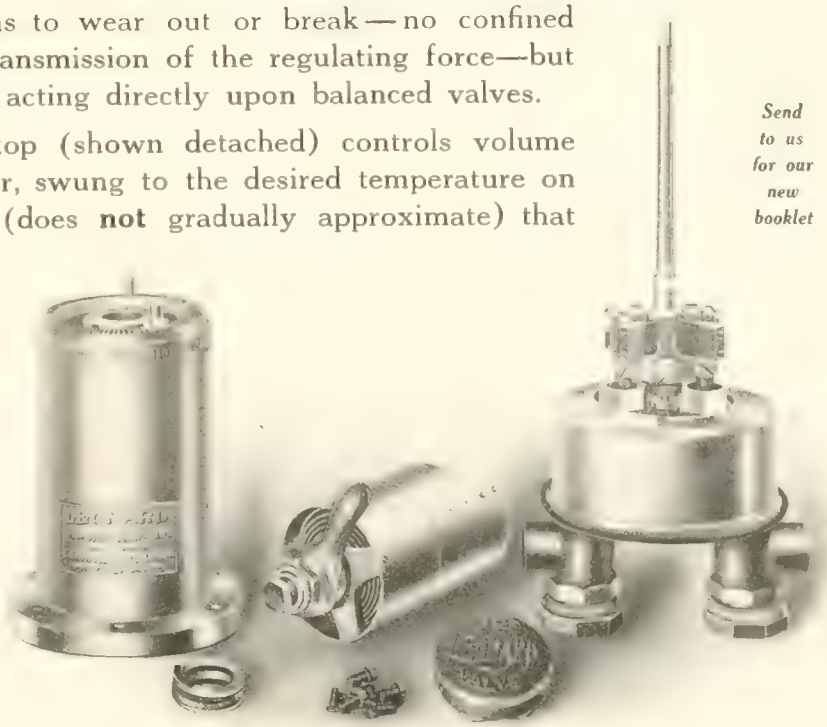
Nothing delicate or complicated about the Leonard Valve

—no drums or diaphragms to wear out or break—no confined liquids—no complicated transmission of the regulating force—but a single thermostatic coil, acting directly upon balanced valves.

The hand wheel at the top (shown detached) controls volume and cut-off; the hand lever, swung to the desired temperature on the scale, **predetermines** (does **not** gradually approximate) that temperature. Instant response and accuracy are the two cardinal features of the Leonard Valve.

All parts are large and free, and boiler scale, sand, sediment, etc., can cause no trouble. There is expert workmanship and fine adjustment throughout; no packings to swell or dry up, and no parts to wear loose.

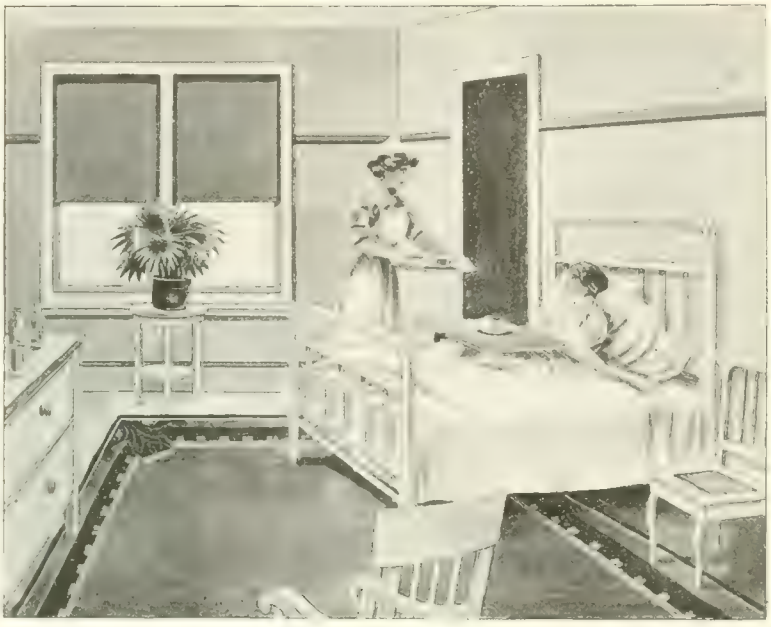
Send to us for our new booklet



LEONARD-ROOKE CO.
PROVIDENCE, R. I.

Kilmarnock and Thread and Thrum Rugs

Are the Practical Rugs for Hospitals



Not in THEORY but in ACTUAL WEAR these Rugs are acknowledged the BEST for HOSPITAL use.

They are SANITARY

They are DURABLE

They are ARTISTIC

For Corridors and Reception Rooms

we recommend the THREAD and THRUM Rugs. These are a heavy flat-weave rug, made for durability. They can be made in any width up to sixteen feet, seamless, to match any scheme of decoration.

For Private Rooms and Wards

use KILMARNOCK Rugs. These are made with a patent binding, giving a hard, firm finish, which will not allow the dust to penetrate.

For the Baths—

KILMARNOCK WASHABLE WOOL BATH Rugs should be used. They are made of Camel Hair and White Wool, and can be washed, scoured or sterilized without injury to the fabric or color.

TRADE MARK REGISTERED U. S. PAT. OFF.

We will have our Representative in your city call on you with samples, at your request

NYE & WAIT KILMARNOCK CORPORATION

AUBURN, NEW YORK

What Users of National Marking Machines Are Doing and Saving

ONE State Hospital using a No. 8 National Power Marking Machine has not only saved 50% in labor, but 75% in marking ink, which will pay for the investment of the machine in less than one year.

The Superintendent of the State Board of Control of one of our very largest States writes as follows:

"We are well pleased with the success we are having with the No. 8 National Power Marking Machine, and hope in the future to install many more in our Institution plants. We are using both National Silver and National 'T' Indelible Inks, with the greatest of success. Both of these inks are permanent. We think, however, that we like the National 'T' the better, because it is less trouble."

Still another:

"The marking for this entire Institution is done with one No. 8 National Power Marking Machine with the aid of one patient. The same work by the hand system required the services of three paid employes and numerous patients.

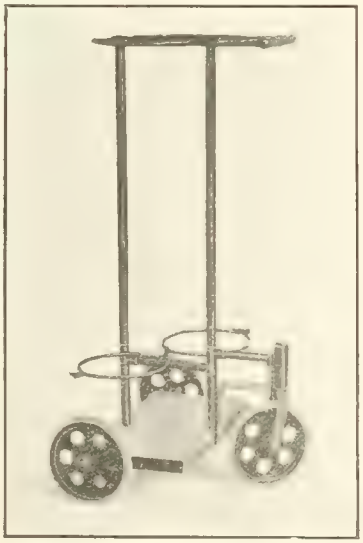
NATIONAL MARKING MACHINES save money in the marking of your linen in both the Linen and the Laundry Department, because markers do more work than can be done by hand, and experience is unnecessary in operating the machine. The mark is so plain that few errors are made in assorting, which saves untold labor in keeping track of the work.

If you want to save time, do neater, plainer and better marking and avoid mistakes, install a NATIONAL MARKING MACHINE, either hand or power.

The National Marking Machine Co.
Cincinnati, Ohio, U. S. A.

No. 8 National Power Marking Machine. 16 Characters.

NOISELESS WHEEL GOODS
FOR HOSPITALS



We specialize on noiseless, smooth-running wheel goods that are so essential around the Hospital. If your anesthetist needs a means of moving the anesthesia apparatus around, this truck will satisfactorily serve the purpose. The truck holds both tanks securely in rubber-padded clamps, and insures absolute quiet, with ease of moving on any floor. This is one of our many special features. Write for catalogue B of Trucks for all purposes, Wheel Stretchers, etc.

EAMES TRICYCLE COMPANY
1714 Market Street San Francisco, Cal.

Holstein Cows' Milk Has More Nutriment in Solids

A prominent Worcester, Mass., physician says: "I find that **the milk of the Holstein cow contains more nutriment in its solids other than fats,** both for the infant and adult, than of any other breed of cows. It has the largest element of vitality in its makeup, especially for the infant. Moreover, the freedom of the Holstein from tuberculosis, as compared with that of other breeds, alone makes it of superior and inestimable value."

If you, as a physician, wish to be fully informed as to the splendid body building and vitalizing properties of Holstein Cow's Milk, especially in infant feeding, we respectfully suggest that you write for our free literature, which contains much data and information.

Holstein-Friesian Association of America
F. L. HOUGHTON, Sec'y
11-S American Building BRATTLEBORO, VT.

Universal Exposition
GOLD MEDAL
Saint Louis
1904

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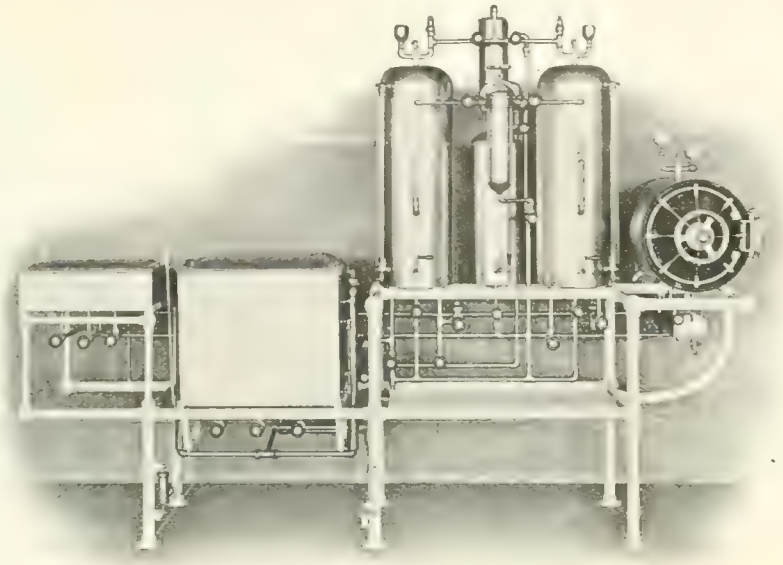
Centennial
GOLD MEDAL
Portland, Ore.
1905

THE "GOLD MEDAL" LINE



ONE OF OUR LATEST COMBINATION OUTFITS
with the new (patent applied for) Ideal Distilled Water Equipment
If interested in sterilizers, let us know your requirements and have opportunity to tell you more about the apparatus that has won highest honors wherever exhibited.

Panama-California
Exposition
GOLD MEDAL
San Diego
1915

AMERICAN STERILIZER CO., ERIE, PA.

Panama-Pacific
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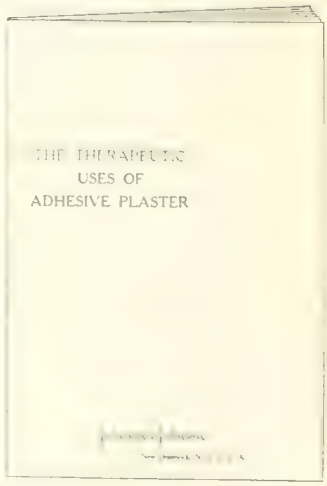
1915

EVERY PHYSICIAN AND NURSE

needs these two booklets, which are sent without charge. The information they contain is accurate, authoritative and of daily usefulness.

A HANDBOOK OF LIGATURES is a forty-eight-page booklet covering the following subjects: *Catgut*—Construction of the raw gut and necessity for absolute sterilization; *Johnson & Johnson Catgut*—Problems of manufacture, *Chromic Catgut*; *Ligature Sizes*; *Tensile Strength of Catgut and Silk*; *Catgut Absorption*; *Tying the Knot*; *Sterile Handling*, *etc.*

THE THERAPEUTIC USES OF ADHESIVE PLASTER is a twenty-two-page booklet, illustrated with forty-one diagrams. It explains methods of applying plasters, in such cases as *Boils*; *Bronchitis*; *Lumbago*; *Uterine and Ovarian Pain*; *Inflammation of Breast*; *Sprains*; *Gastric Neurasthenia*; *Typhoid*; *Hiccough*; *Neuralgia*; *as a Cosmetic*; and *as a Support in Cases of Fracture, Enteroptosis, etc.*

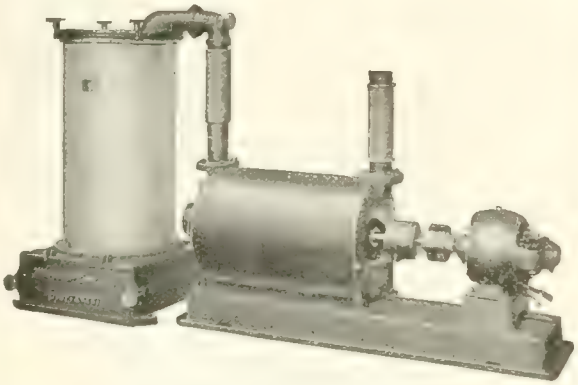


JOHNSON & JOHNSON

New Brunswick, N. J., U. S. A.

Clean all the Dirt out of your hospital quietly, quickly and without moving furniture by using a

Western Electric Vacuum Cleaner



Little head room or floor space needed for our stationary types

One of our vertical stationary types. We have many portable types also — all equally simple and reliable

These cleaners are reliable, economical and quickly installed. They require practically no care other than emptying out the dust.

Send for booklet

Western Electric Company

New York	Atlanta	Chicago	Kansas City	San Francisco
Buffalo	Richmond	Milwaukee	Omaha	Oakland
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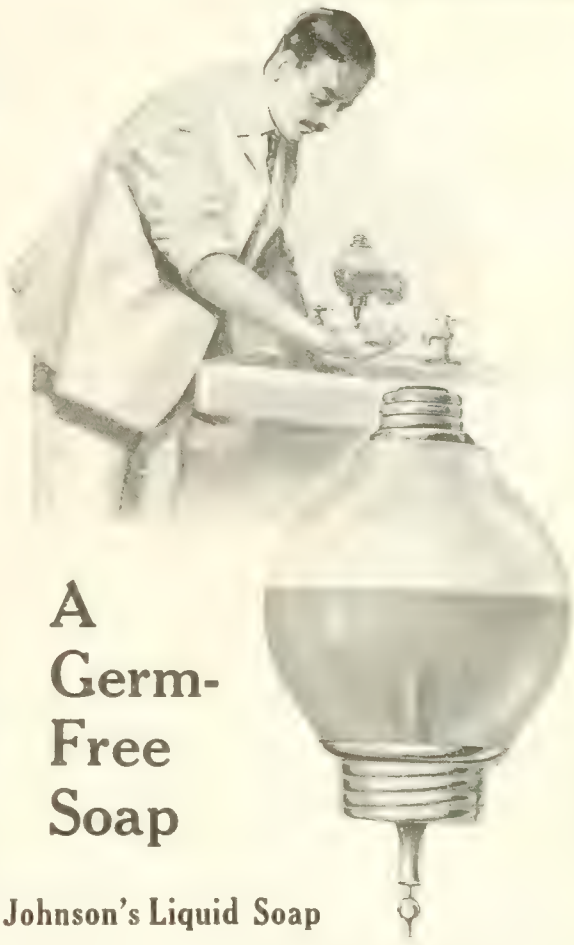
EQUIPMENT FOR EVERY ELECTRICAL NEED

Member Society for Electrical Development "Do it Electrically"



A Germ-Free Soap

Johnson's Liquid Soap

is the logical soap for the surgeon's scrubbing room, the nurses' washrooms, and all places where hospital workers wash their hands during the day's work.

Many liquid soaps are so harsh and deficient in lather that they have prejudiced users; but JOHNSON'S LIQUID SOAP lathers profusely, has a heavy body, and is made in accordance with Government specifications.

There is no waste with JOHNSON'S LIQUID SOAP; and it saves time as well as money.

You should have received a sample of Johnson's Liquid Soap, sent you for ***personal*** trial. If this has not reached you, drop a postal and another will be forwarded at once.

DISPENSER FREE

On initial orders for JOHNSON'S LIQUID SOAP we will give ***one No. 1 Dispenser with every five gallons,*** with the limit set at five free Dispensers.

As these Dispensers are very substantial, easily operated and generally satisfactory and convenient, you will find them valuable equipment. This offer expires October 31.

If you haven't a copy of our industrial and institutional catalog, write for one. We will forward it immediately for your files as an aid to economical and efficient soap buying. Address

B. J. JOHNSON SOAP COMPANY, Inc.

General Offices, Milwaukee, Wis.

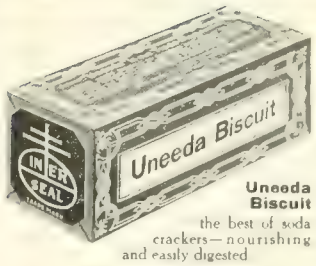
DISTRICT SALES OFFICES

NEW YORK, Woolworth Bldg. — CHICAGO, 36 S. State St.

ST. LOUIS, Railway Exchange Bldg.

DETROIT, 455 Equity Bldg. — MINNEAPOLIS, 831 Hennepin Avenue

CANADIAN FACTORY, 155-157 George St., Toronto, Ont.



Uneeda Biscuit
the best of soda crackers—nourishing and easily digested

Graham Crackers
They satisfy hunger between meals and always make a desirable addition to the tray.

Zwieback
Light, appetizing and nutritious. The delicate stomach digests Zwieback easily

THE luncheon tray will be welcome if N. B. C. products are served at mid-morning or mid-afternoon when nourishment is needed. These are suggested for dietary purposes because they are nutritious and light. They contain all the necessary elements for those who are not permitted to eat heavier foods—Water Thin Biscuit, Bent's Water Crackers, N. B. C. Dinner Biscuit, Eggnells. Get them at your grocer's, always fresh and good.

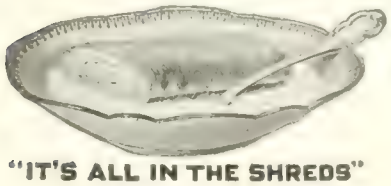
NATIONAL BISCUIT COMPANY

Not a "Pre-digested Food"

Relieving the stomach of its work impairs its natural vigor. The so-called pre-digested foods are of doubtful value in restoring the functions that have been put out of business by food follies or nervous disorders.

Shredded Wheat

is not a pre-digested food. Being steam-cooked, shredded and baked, the elements which Nature has stored in the whole wheat grain are taken up and assimilated when the stomach rejects all other foods. It is the nurse's favorite food for the convalescent. It is delicious with hot milk or cream, or can be served in many delicious combinations with fruits. Always glad to furnish free samples to physicians, nurses and hospital superintendents.



"IT'S ALL IN THE SHREDS"

Made only by

The Shredded Wheat Company

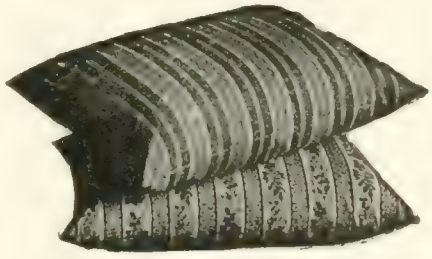
Niagara Falls, N. Y.

"Every hair a spring"

IF all other comforts were barred because of expense, it would still be the wisest policy to get the **best** mattresses.

The lighting, the surroundings, the coverings, even the bed itself, are hardly as important to the patient's comfort, and perhaps to his early recovery, as is the mattress on which he spends practically his entire time while in the hospital.

A MATTRESS of MITCHELLIZED CURLED AND STERILIZED HAIR is a permanent investment, in which there is practically no depreciation. The hair can at any time be washed and sterilized, and the ticking, if desirable, renewed. "Every hair is a spring;" and neither time nor hard use affect its resiliency.



Mitchell's Perfection Brand Pure Feather Pillows are sanitary and of highest grade.

If you are contemplating purchasing a mattress, write us. We will put you in touch with the nearest dealer.

Send to us for interesting pamphlets on the subject of sterilized curled hair, and of its value in the hospital.

THE P. R. MITCHELL COMPANY

Established 1854

CINCINNATI NEW YORK

THE next time you buy rubber sheeting ask for

TRADE MARK REGISTERED Imperial RUBBERIZED

It's manufactured by a process that insures you absolute satisfaction.

"Imperial" sheeting will stand the most rigorous sterilization in steam or water; it is not affected by dry heat, acid, alkaline or saline solutions; its perfect coating resists the action of urine.

Manufactured from the strongest cotton fabrics and rubberized by this special process, it will give long service and will not peel, crack or harden. Samples on request.

Sold only through jobbers

Rosenwald & Weil

Rubberizing Plant

1514-24 West Kinzie St. CHICAGO

ADAM WUEST

Tuftless, Sterilized, Curled Hair

MATTRESSES

are made in *pre-shrunk* removable ticking, which can be laundered or sterilized. When it is put on the mattress after laundering it will *still fit.*

The filling material can also be sterilized or washed, and will retain its resiliency unimpaired. As the inner covering of this filling is of light muslin, there is no interference with sterilization.

ADAM WUEST

514 East Pearl Street CINCINNATI

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SEDGWICK

HOSPITAL

DUMBWAITERS

WHEN you purchase a dumbwaiter, you **pay** for equipment, but what you really **buy** is service. And the amount of **service** you'll get for the money you pay depends upon your judgment as a buyer and upon the skill, experience and integrity of the maker of that dumbwaiter. Listen! Over 50,000 **Sedgwick** Dumbwaiter installations are giving entire satisfaction. There is a safe precedent to guide your judgment. Further—the **Sedgwick** Service Department, a corps of experts, passes upon every order, to be **sure** that the dumbwaiter furnished is **exactly right** for the conditions under which it is to operate. This is your assurance that the **Sedgwick** Dumbwaiter you buy will be **really serviceable.**

You will have the essential factors in dumbwaiter and elevator selection set clearly before you by reading our booklet, "Dumbwaiters and Elevators in Modern Architectural Practice." Ask for your copy today.

Sedgwick Machine Works

Specialists in Hand-Power
Dumbwaiters and Elevators

218 Liberty Street, New York

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TERRELL'S EQUIPMENT COMPANY
Hall and Shamrock Sts. Grand Rapids, Mich.

The Ideal Equipment for Institutions

STEEL

Lockers
Wardrobes
Cupboards
Shelving

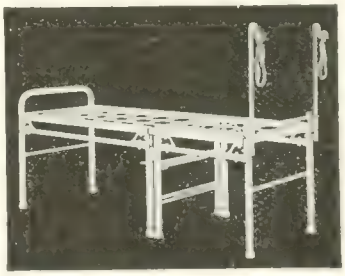
Diminishes Fire Hazard and Affords Perfect Sanitation.

Moderate Cost

Let us figure on your needs or send you descriptive matter.

STEEL
Hospital Furniture and Bedsteads
OF
Distinctive Character and Quality

Originators of Flush Joint Construction for Hospital Equipment, eliminating bulky castings and crevices which collect dust and germs.



No. 75—Obstetric Bed

No. 86—Cabinet

Catalogue and discount on application

RICHARDSON, WRIGHT & CO.

Manufacturers of
Steel Hospital Furniture and Bedsteads
Mattresses and Pillows

Chardon and Portland Streets BOSTON, MASS.

NEW GENERAL HOSPITAL, CINCINNATI, OHIO. SAMUEL HANNAFORD & SONS, ARCHITECTS

THORP FIRE PROOF DOORS

MAKE EACH ROOM A SEPARATE BUILDING

STAIRWAYS should always be protected. Whatever you do, protect the passages from floor to floor. The illustration shows the Thorp way of perfect protection, without reducing light area or ventilation.

This is a visible evidence of the care taken to protect the patient, and immediately instils confidence in the other functions of the hospital. Thorp doors and frames are fire proof, attractive, economical, clean and sanitary. "Thorp doors are designed to keep the fire confined."

THORP FIRE PROOF DOOR CO.

MINNEAPOLIS, MINN.

Two Valuable Cleansers
For the Hospital

FOR linens, woolens, woodwork, floors, marble, glass, furniture, silver or dishes.

Rub-No-More Carbo-Naptha Soap
AND
Rub-No-More Naptha Soap Chips

free the fabric or surface from oils, grease and all septic matter in the minimum of time and yet without injury to woolens or linens.

Try them at our expense

Send to us for a sample quantity sufficient for a week's washing. You will be surprised to see how far it goes.

There is big economy for even the small hospital in Rub-No-More Naptha Soap Chips in barrels.

THE RUB-NO-MORE CO.
FORT WAYNE, IND.

The **Pfaudler** *Glass Enameled Steel Laundry Chute*

Specification for Laundry Chute

Provide and install laundry chute where shown. Same shall be glass enamel lined, 24 inches inside diameter, and not over 2 feet 5 inches outside diameter of flange.

The chute shall be made of steel, properly flanged and bolted together in sections or rings not to exceed 48 inches long. Door sections shall be of length to receive the openings where shown.

Provide and set at each floor where shown German silver doors, with either plate glass or polished wire glass set in rubber bed to prevent jarring.

Doors to be 22 inches in diameter and equipped with closing clamps, which permit their being closed water-tight.

Throat to which door is attached shall be of steel welded to chute proper and enameled. The bottom of chute shall be closed with head of enameled steel, with 2-inch outlet bushing for drain connections.

Chute shall be provided with four legs for its proper support. Additional supports shall be provided at each floor. These supports to consist of ⅝-inch tie rods and three angle irons to rest in steel work at each floor.

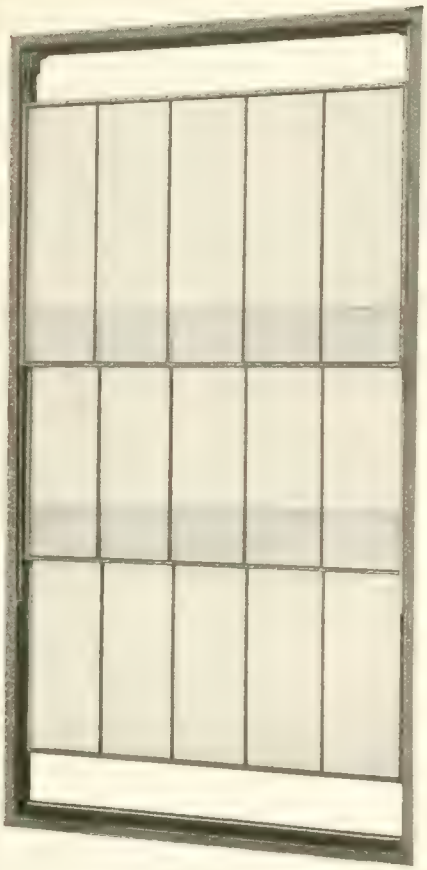
The enameling of the interior shall extend into section joints. All sections shall be erected in accordance with the manufacturers' direction.

All joints shall be properly packed so that the chute shall be water-tight.

Chute shall be of The Pfaudler Co., of Rochester, N. Y., make.

The top section shall be provided with a 2-inch flushing ring of brass, nickel plated, to which may be connected by means of standard 2-inch bushing, the water service pipe.

The Pfaudler Co.
Rochester, N.Y.



A Steel Window That Slides Up and Down

The hospital need for windows that admit maximum light and air with ease of operation is fully met in this new model —the vertically sliding sash—

Fenestra
SOLID STEEL WINDOWS
"REG. U.S. PAT. OFF."

To all the Fenestra benefits in health and comfort are added the advantages peculiar to this sliding type.

It is easily washed and admits the use of screens, shades and wire guards.

It moves in the familiar way—up and down—and does not protrude from the walls when open.

Standard sizes of Fenestra are as cheap as wood sash and can be shipped on ten days' notice. Our factory-trained experts will erect and glaze the sash and assume all responsibility for installation, if you so desire.

DETROIT STEEL PRODUCTS COMPANY
DEPT. J 14 DETROIT, MICHIGAN

BALE YOUR WASTE PAPER

and fabric into a compact unit and convert into a profit what is now a waste and fire danger to your hospital.

Waste paper can only be sold when baled. It can only be stored when baled. The Alsteel Paper Baler is a fireproof storeroom for waste.

It is not an expense, but an investment. Paper mills and paper stock buyers are anxious to get clean baled paper, and the price is from $7.00 to $15.00 per ton. You will be surprised how quickly a ton accumulates. Why burn money?

A 100-BED HOSPITAL CAN PAY FOR AN ALSTEEL PAPER BALER IN LESS THAN FOUR MONTHS by merely saving what is now thrown away. Its life is indefinite. Figure the profit after it has paid for itself.

An Alsteel Paper Baler means LOWER INSURANCE RATES on your building.

Light, strong, compact, easy to operate. ALL STEEL. Occupies half the space of a bunglesome wooden baler. Can be moved like a truck.

Write for full description and price list.

ALSTEEL MANUFACTURING COMPANY
BATTLE CREEK, MICHIGAN

The Lakeside Hospital, Cleveland, is satisfied with its Alsteel Baler. Ask them. A few of the other hospitals now using: St. Vincent's Charity, Cleveland, Ohio; German Hospital, Chicago; Bellevue Hospital, Bellevue, Pa.

Something New!

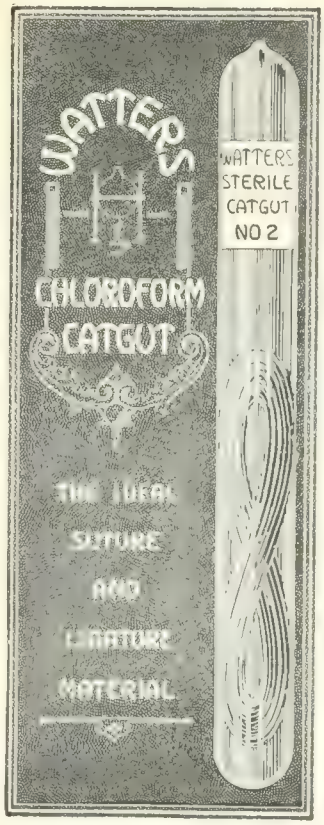
A Hospital Necessity

A tough, hard, floor finish that can be applied over new or old wood floors, making them as easily cleaned and almost as durable as marble.

MARBLEITE

It will not scratch or mar white. It will not show heel marks. Hot water does not hurt it. Write to us and we will tell you about it.

PHOENIX PAINT & VARNISH CO.
124 Market Street Philadelphia



? Why ? WATTERS CHLOROFORM CATGUT

BECAUSE

it was *the original Chloroform Catgut*

CHOOSE

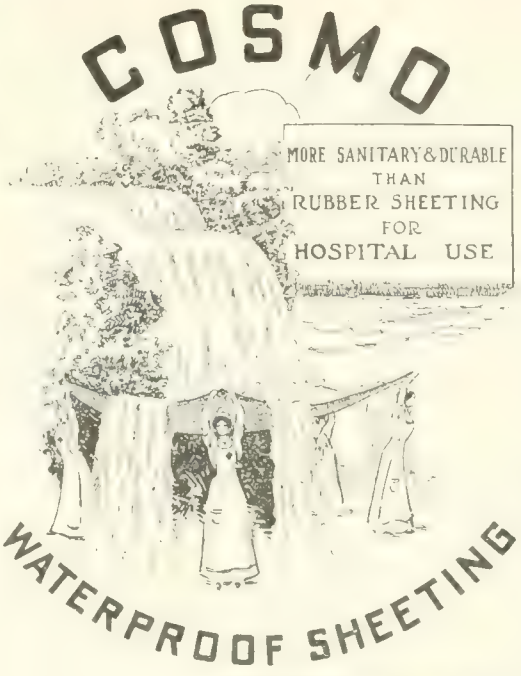
between experience and experiment

This catgut set a new standard for safety, tensile strength and rigorous uniformity over ten years ago; and has maintained its lead among conservative surgeons who place safety and satisfaction above price, knowing that Watters Catgut is the *most economical in the end.*

Price, Large Tubes . . . $2.50 per doz.
Emergency Tubes . . . . 1.00 per doz.

Discount in Gross Lots

The Watters Laboratories
55 Fifth Avenue, New York



It has all of the advantages—none of the disadvantages—of Rubber Sheeting.

COSMO SHEETING

Cosmo Sheeting is impregnated completely through the cloth and will never peel nor crack.

Cosmo Sheeting never goes bad.

Cosmo Sheeting remains pliable indefinitely.

Cosmo Sheeting presents a slightly roughened surface which prevents slipping of the bed sheet and lessens tendency to perspiration and bed-sores.

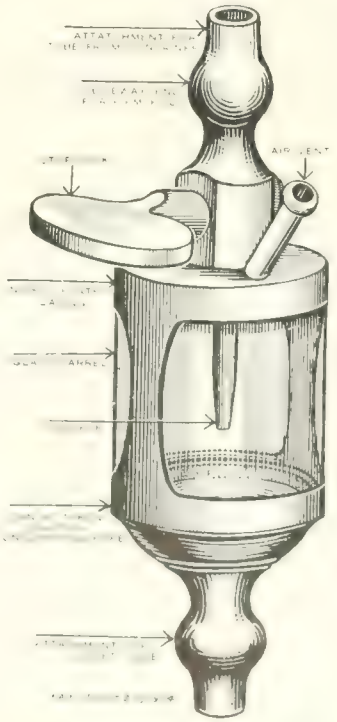
Cosmo Sheeting can be washed with soap and water and ironed with a hot iron.

Cosmo Sheeting is inexpensive and outlasts Rubber Sheeting several times over.

We will send you a free sample on request

THE WATTERS LABORATORIES, 55 Fifth Ave., New York

A NEW MURPHY DRIP



THE MINNINGHAM PROCTOCLYSIS APPARATUS

SAFE
DURABLE
ACCURATE

Can be used with any of the usual Saline Rectal Infusion Apparatus. No danger of breakage, as the glass is very heavy and is encased in a brass, nickel plated frame. Olive-shaped connections for attaching the rubber tube from the container and the rectal tube. Metal stop-cock accurately regulates the flow. Vent permits free escape of gases and equalizes the pressure.

Price $2.50, Prepaid

Cheapest in the end. 1 outlasts 1 dozen glass ones

THE WATTERS LABORATORIES

55 Fifth Avenue **New York**

To Safeguard the Baby's Digestion

— especially during the hot months — it is imperative to use a food that is sterile and safe. **Fresh cows' milk, no matter how carefully it is handled is never free from bacteria — the menace of infection is always present.** To be sure, this may be slight, but if the season is hot or a child in a weakened state, the smallest amount of infectious material is usually sufficient to give rise to some acute digestive disturbance, with an all too frequent fatal outcome.

Safety lies only in the use of a food that in addition to being nutritious, freely adaptable and easily digested, is also germ-free. Such is

Nestlé's Food

a concentrated, highly nutritious milk powder—made from the richest cows' milk and selected cereals—which *does not require the addition of fresh cows' milk*, but simply the right amount of water and boiling for one minute to provide a **complete, well-balanced** and **absolutely sterile** food, closely approximating mothers' milk.

An ideal infant food at all times when mothers' milk is no longer available, it is especially during the hot weather, however, that Nestle's Food gives most striking evidence of its capacity to relieve and prevent those digestive disturbances that every year rob us of so many little ones.

SAMPLES ON REQUEST

NESTLÉ'S FOOD COMPANY
233 BROADWAY, NEW YORK

Order Winter's Supply Now

BEST and LARGEST HOSPITALS use

OUR QUALITY HOT WATER BOTTLES

Full 2 quart capacity

GUARANTEED FOR TWO YEARS

Especially made for hospital use

Get our prices for immediate or future delivery

Woods Hospital Supply Co.
180 North Market Street, CHICAGO

Adopted by the U. S. Navy

Used in field and hospital under every condition of climate, in every corner of the world.

The Verdict — "Absolutely Satisfactory."

Royal Archer

THE PERFECT RUBBER SHEETING

GOOD ENOUGH for Uncle Sam
is it TOO GOOD for YOU?

Sterilizable—of course—and a real economy because
ONE FULL YEAR OF SERVICE GUARANTEED

Your dealer will supply you. We will gladly send samples and full information.

ARCHER RUBBER COMPANY
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in hospital and Red Cross dietaries. It is generally admitted that the growth of malignant germs proceeds at a greater rate in fresh or sterile milk, when open to infected air, than in milk which has been sweetened and hermetically sealed in cans like

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This truth was originally stated by Prof. Fraenkel in his "Bakteriologie." In hospitals and Red Cross stations, infectious diseases are prevalent, and may be carried by healthy persons as well as by the sick. Healthy "carriers" of contagious diseases have not been known to infect **Gail Borden Eagle Brand Condensed Milk** because germs do not grow in it easily. Hence, by using this milk, you minimize the danger of "carriers" of

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Easy to Apply and Cannot Peel or Tear Off; of Wonderful Economic Importance to Hospitals and Individuals.

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E. Z. Patches for Hot Water Bottles, Home Size, Twenty-five 25c, Hospital Size, Twenty for **$1.00.**

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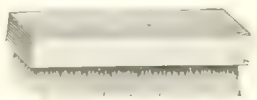

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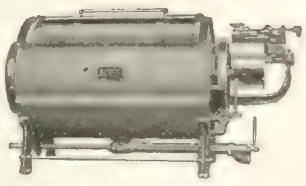

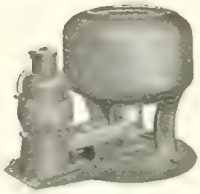

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The problem o designing an ideal lighting unit for illuminating hospital ward rooms is a difficult one.

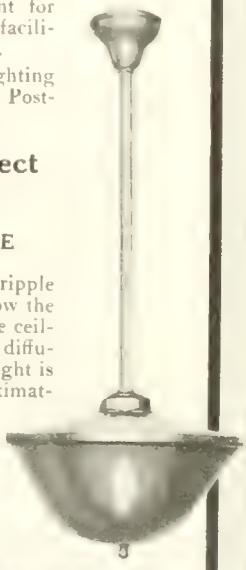
Correct light intensity and distribution must be maintained, yet the primary source of light must be so screened as to prevent a harmful glare from falling on the weakened eyes of the sick.

It is imperative that lodgment for germs and dust be minimized and facilities for easy cleaning be featured.

This is the problem that J-M Lighting Service solved for the New York Post-Graduate Hospital by supplying

Frink Dustless Indirect Ward Reflectors

FOR HOSPITAL SERVICE



The highly perfected silver ripple glass reflectors of Frink Units throw the light in a wide angle on the white ceiling, whence it radiates in perfect diffusion throughout the room. The light is soothing, soft and restful, approximating daylight.

The Frink Dustless Indirect Ward Reflector is furnished in spun brass with the outside enameled either green or white. Thin blown glass placed on top of fixture prevents collection of dust.

With [illegible] showing Frink Reflectors in use, [illegible]

H. W. Johns-Manville Co.
New York and Every Large City

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Frink and J-M Linolite Systems of Illumination
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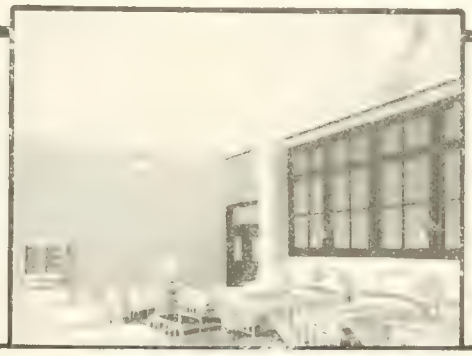

Night view of ward in Post Graduate Hospital, N. Y.
Frink Dustless Ward Reflectors

Ask for it by name–

and thus avoid substitution

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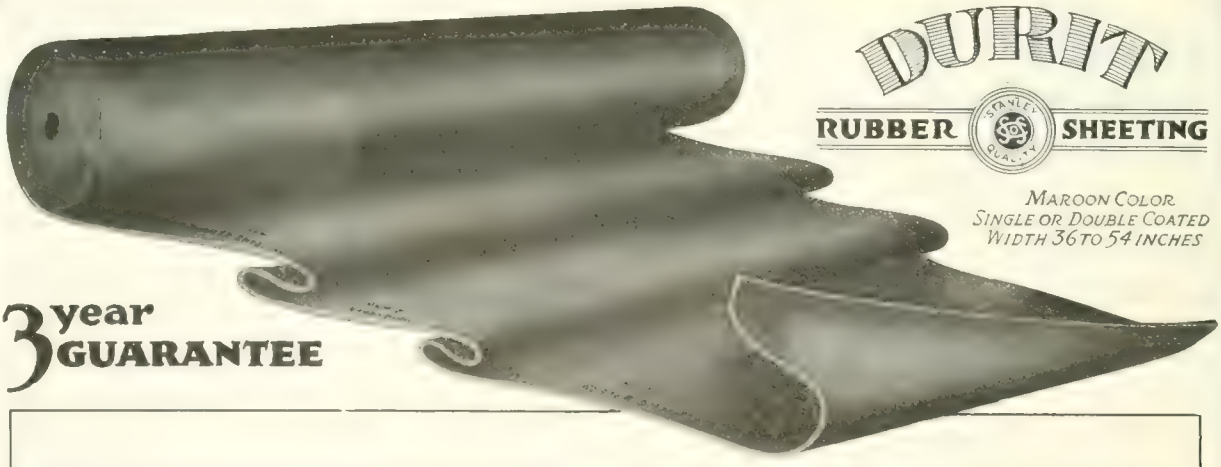

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A dull-toned wall finish in approved hospital colors.
A surface that is absolutely washable.
An economical, durable finish that need not be removed to repaint.
A non-porous, yet elastic, surface that offers no lodgment for germ-laden dust particles.

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The standard washable dull finish oil paint

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"THE White is the best ambulance on the market". When this statement is made vigorously and without qualification by prominent hospital men, it means something more than a trivial bias. It means that the White ambulance fills certain requirements which in their experience are vital.

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A most important service requirement is smooth-riding. The car must be heavy enough to be steady, free from jar and from danger of skidding or jumping. It must have special springs, soft without too much resiliency. It must have smoothness in its mechanical operation—no grinding nor jerking when starting. And it must have perfect balance. The engineering ability that has made the White reputation what it is in the automobile industry has solved these problems with perfect results in the White ambulance.

Another most important consideration is economy. What it costs to buy an ambulance is not so important as what it costs to run it and how long it will last. The success of White ambulances is due largely to the fact that they remain in service year after year at a uniformly small cost for upkeep and maintenance.

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BALTIMORE	Mt. Royal and Guilford Avenues
PITTSBURGH	Craig Street and Baum Boulevard
ATLANTA	63-65 Ivy Street
ST. LOUIS	3422 Lindell Boulevard
WASHINGTON	1233 20th Street, N. W.
NEW ORLEANS	750 St. Charles Street
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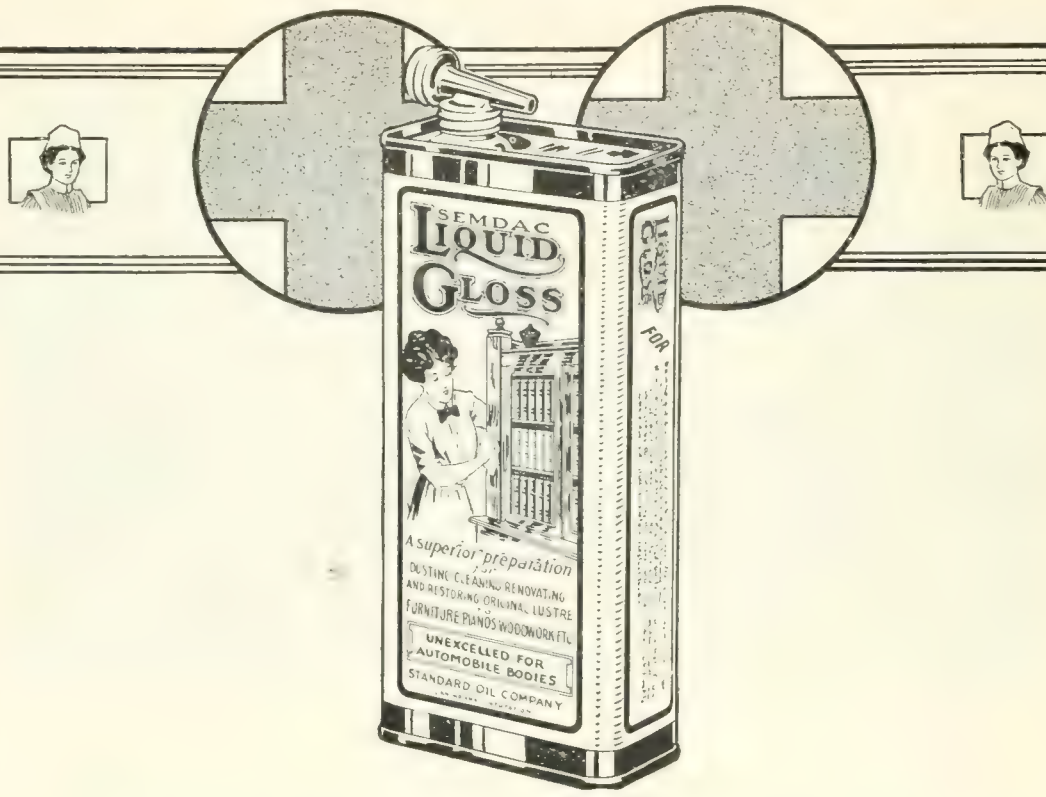

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demands more than soap and water

That is why officials in modern hospitals are adopting *Semdac*—the sanitary cleanser—for general cleaning work.

Semdac Liquid Gloss is a universal duster and cleaner that does its work thoroughly and without injury, polishing as it cleans.

Performing these three duties in one operation *Semdac* accomplishes three results. It sanitizes all cleaning work, preserves equipment, and lightens the work of nurses and attendants.

Semdac begins its work with dusting. A few drops sprinkled on a dust cloth prevents dust from scattering.

For cleaning white enamel beds, white woodwork and furniture, *Semdac* is unequaled. It removes spots and discolorations, erases mars and scratches, preserves the original finish.

This economical cleanser gives a new, brilliant lustre to highly polished surfaces such as, pianos, woodwork and furniture.

Use *Semdac* for polishing windows, mirrors, linoleum and hardwood floors. Use it in the stable for metal polish, garage work — for restoring original carriage body finish.

Wherever there is any cleaning work to be done, *Semdac* will do it quicker, better, and more efficiently than soap and water.

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Semdac will not discolor or become rancid. It comes in lithograph cans, fitted with a convenient spout. Sold also in barrels and half barrels.

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is the companion cleanser of *Semdac*. It is especial y adapted for hospital and sanatorium use, to keep wooden floors clean and in good order. Like *Semdac* it is economical and thoroughly satisfactory. It is guaranteed by its makers and may be obtained anywhere from leading dealers.

STANDARD OIL COMPANY
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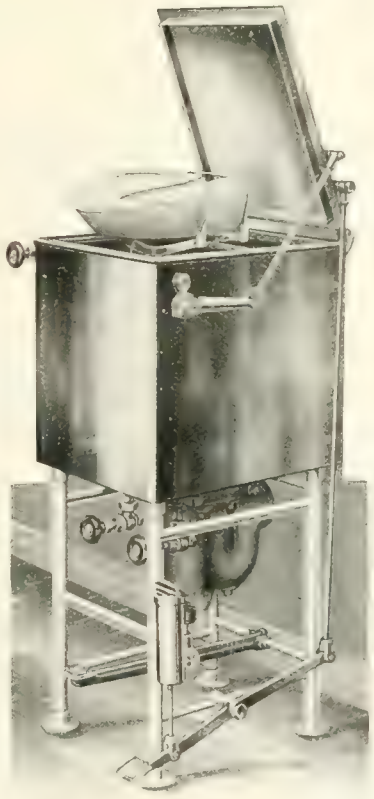
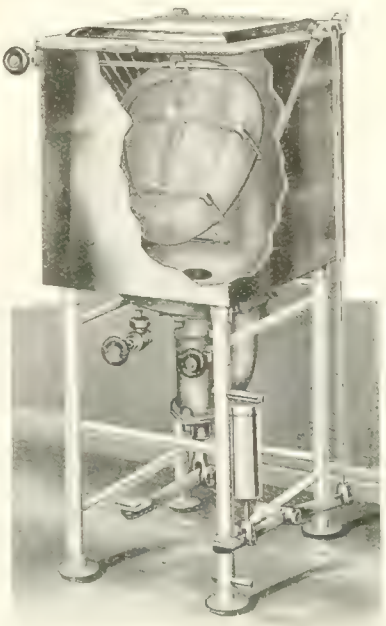
Chicago, U. S. A.

Semdac Liquid Gloss

(418)



The Castle Bed Pan and Excreta Sterilizer does ALL the work



IT is not a mere washing machine; it *sterilizes* both bed pan and excreta and disposes of the latter without maintaining a permanently septic condition in the interior of the plumbing.

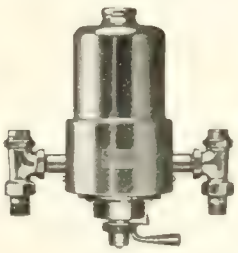
All that is necessary for the nurse to do is to lay the bed pan in the sterilizer, as in the left-hand illustration, the door being held open by pressure of the foot on the foot lever. Releasing the foot gives the pan the position shown in the right-hand illustration. The bed pan is then, by turning the valves, sprayed, its entire contents are sterilized and discharged, and both pan and tank thoroughly rinsed.

No steam and no odors can escape.

Write for Interesting Circulars

Makers of Sterilizing and Bacteriological Apparatus

WILMOT CASTLE COMPANY, ROCHESTER, N. Y.



Filling a Hydrotherapeutic Prescription

APPLIED to the continuous flowing bath the POWERS THERMOSTATIC HOT WATER CONTROLLER makes it possible to fill the doctor's prescription with accuracy. The controller is easily adjusted to the temperature desired, and maintains this temperature regardless of varying pressures or temperatures in water supplies. Failure of the cold water supply automatically shuts off the hot, thereby making scalding an impossibility.

The controller is adaptable to all installations; may be set in table, or locked in a wall recess, or exposed with adjusting handle, as desired. It can be installed by any plumber.

The Powers Regulator Company

103 Park Avenue NEW YORK — **5 S. Wabash Ave.** CHICAGO

Manufacturers of temperature controlling apparatus

450 Escape in Two Minutes

A very interesting and practical fire drill was conducted in the Texas School for the Deaf at Austin. The Superintendent of the school wrote:

"Gentlemen: I am pleased to advise that we have had in use for over three years the Kirker-Bender Slide Fire Escape and the same has given perfect satisfaction. In fact, I am of the opinion that it is the only safe fire escape on the market today. We have over 450 pupils here and we can empty them out of the dormitories in less than two minutes.

"It gives me pleasure to recommend this escape to anyone needing fire escapes."

This test indicates the practical value of Kirker-Bender Fire Escapes to hospitals. Many hospitals are now equipped with them. Many others should be. You can get full details about this improved means of fire escape by writing the Dow Wire and Iron Works, Louisville, Ky.

RIPOLIN Enamel Paint for Sterile Cleanliness

Operating Floor, St. Anthony's Hospital, Woodhaven, L. I.
Walls, Trim, and Doors in RIPOLIN
I. E. Ditmars, Architect *M. Hallenbeck & Son, Painters*

The glossy, porcelain-like surface of Ripolin makes it ideal for use in hospitals—not the slightest lodgment for dust and bacteria. Wherever applied—kitchens, operating rooms, laundries—Ripolin is always aseptic and durable. Impervious to thermal conditions, steam vapors, and chemicals, which would quickly ruin ordinary enamels.

Hard knocks of every-day hospital life, the scrape of a wheeled chair, contact with a carelessly placed instrument cabinet, and such wear and tear leave no marks on its remarkably elastic surface.

Ripolin has an unusual covering capacity, averaging from 500 to 700 square feet per gallon, depending on the nature of the surface. Made by the old Dutch hand process, it comes in that brilliant high gloss like glass, in a beautiful egg-shell finish, or absolutely flat.

Any tint desired may be obtained by mixing pure color ground in Japan with white Ripolin. Ideal for decorative purposes in halls, bedrooms, or corridors.

Send for this strip of tin coated with RIPOLIN. Bend it, twist it—you cannot crack or flake the enamel.

Write for a booklet giving names and illustrations of notable hospitals painted with Ripolin. Let us send also that strip of Ripolin coated tin so that you can test it for yourself.

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Importers and Distributers of RIPOLIN for the U. S. and Canada

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¶ Two ward or private-room necessities in one.

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¶ Cabinet of steel.

¶ Wood slide for feeding patients.

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subject to discount)

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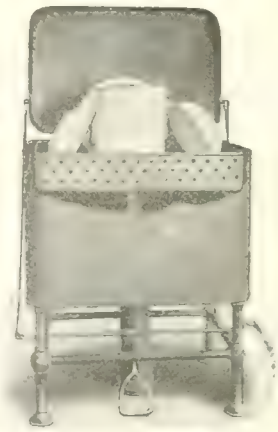
ASEPTIC FURNITURE MFG. CO.
(INCORPORATED)

1530-32 First Avenue, South Seattle, Wash.

BY a pressure of the foot the cover of the *Barnstead Utensil Sterilizer* opens wide; and at the same time the automatic lift causes the tray and contents to rise. When the cover is closing, the tray recedes.

The mechanism is simple in construction, and the whole apparatus is easily and quickly cleaned.

MADE and sold by the Barnstead Water Still Co., 51 Chardon St., Boston.



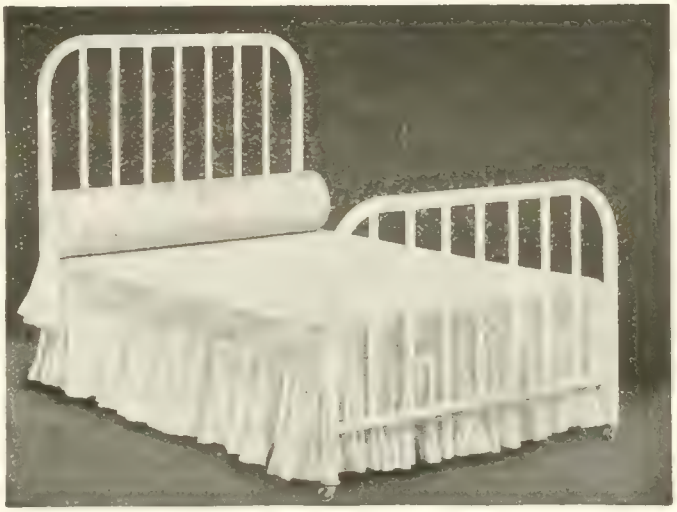
SEND for catalog of Water Stills, Sterilizers, and other hospital needs.

Strength Without Weight In Simmons Hospital Beds

SIMMONS Steel Tube

Old Style Iron Pipe

SIMMONS STEEL equals the strength-requirements of iron three times as thick. Weight is proportionately decreased. Lightness and new steel-wheeled leg-mount casters make bed very easy to move. Steel permits of larger diameter tubing than ever before possible in hospital beds. Creates handsomer appearance. Steel surface, burnished to saw-blade fineness, takes sanitary, glass-like finish.



No. 1305. Continuous Pillars, 2 inches; Bottom Tube, 1¼ inches; Filling Tubes, 1 1/16 inches; Height of Head, 58 inches; Height of Foot, 38 inches. Made in four widths, 4-6, 4-0, 3-6 and 3-0.

Former Weight, 125 lbs.
New Weight . . 89 lbs.
SAVING . . . . 36 lbs.

OLD-FASHIONED hospital beds made of what is commonly known as "gas pipe" require heavy-gauge tubing to give the needed strength and rigidity. Makes heavy beds that are hard to move. Chills abolished entirely in SIMMONS STEEL Hospital Beds. Imperfect, cast (not cold-rolled) surfaces of iron are gouged, pitted and scaly, making a perfect finish impossible.

How SIMMONS STEEL Has Revolutionized Hospital Beds

READ carefully the two paragraphs above under the pictures of the Simmons Steel Tubing and the iron pipe. This **SIMMONS STEEL is an exclusive Simmons product fully protected by United States patents.** These beds can be obtained from no other manufacturer. We invite hospital managers, physicians, nurses and others who are interested to write our Hospital Bed Department for detailed descriptions.

When you are in Chicago we will welcome your inspection of our Model Hospital Ward and Room on permanent display at our Sales Building, 1347 Michigan Avenue

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Look for the name on the edge

MEINECKE

How Long Does YOUR Rubber Sheeting Last?

At the Hospital Convention in San Francisco, we exhibited samples of the MEINECKE MAROON RUBBER SHEETING which had been in actual constant use from three to six years. These samples were still in excellent condition.

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No Other Sheeting Has This Record

OUR GUARANTEE—We positively guarantee the Meinecke Maroon not to get hard, crack, or peel, even with long, constant and severe usage. In addition we guarantee it to be unequalled in its wonderful urine-resisting properties and great tearing strength.

You Can Be the Judge

HALF PRICE OFFER: We will send to any Hospital for Trial a *Two* Yard Piece at Half Price—Double Coated 36-inch width (or 45-inch if you want this width). *Write for samples and prices if you require sheeting at present.*

...able discounts from list prices, based on the size of not only the one order, but all other orders given at the same time for other classes of rubber goods. Meinecke, of New York, sells the best rubber sheeting, and at their best prices it will be found most economical. Of course there is a great deal in the quality of the cloth used in rubber sheeting, and this quality can be tested by its tearing properties at the time of purchase, and if the cloth itself is of good quality the sheeting will not break ...

Extract from Dr. Hornsby's Book "The Modern Hospital"

MEINECKE & Co., NEW YORK

THE MODERN HOSPITAL

A Monthly Journal Devoted to the Building, Equipment, and Administration of Hospitals, Sanatoriums, and Allied Institutions, and to their Medical, Surgical, and Nursing Services

Vol. V *October, 1915* No. 4

REQUIREMENTS OF MODERN CONTAGIOUS DISEASE HOSPITALS

Plans of Permanent and Temporary Structures to Meet Varying Conditions—Two Examples of This Architecture With Special Details for Each—Arrangements for Light, Heat and Service

By FREDERIC W. SOUTHWORTH, B. S., Architect, Bureau of Yards and Docks, Washington, D. C., and LUCIUS W. JOHNSON, D. D. S., M. D., Passed Assistant Surgeon, U. S. Navy

PROVISION for isolation of the patient and disinfection of his effects is the distinctive feature of a contagious disease hospital. Ideal isolation should begin at the moment a patient enters the hospital and continue until he leaves and should extend to the persons attending him as well as to the dishes, bedding and other objects with which he comes in contact. That such elaborate isolation is necessary or altogether desirable is a debatable question, and the excellent article by D. L. Richardson (THE MODERN HOSPITAL, Vol. I, No. 2, p. 76) affords some strong arguments on the negative side.

The accompanying illustrations show two types of contagious disease hospitals, one of permanent and one of temporary construction.

HOSPITAL OF PERMANENT CONSTRUCTION

The plans submitted herewith for a hospital of permanent construction provide for isolation from the time the patient leaves the elevator after admission to the time of entering the elevator on discharge, the elevator and other neutral spaces being so constructed and furnished as to facilitate and simplify disinfection either by gases or solutions. Each ward has its own eating utensils, which remain in the ward. Containers in which food is sent up on the dumbwaiter are boiled in the ward diet kitchens, the metal basket containing them is removed from the sterilizer and placed, without drying, on the dumbwaiter, which goes to the central kitchen. Linen is placed in canvas bags and sent down on the elevator, or else placed in the chute leading to the basement; in either case it goes then to the disinfector and, after disinfection, is taken out into the clean room and sent to the laundry. Sputum cups, gauze and other waste are burned in the incinerator with which each ward is equipped.

Certain features will be necessary if the structure is to act as an independent institution, but will not be required if it constitutes a unit of a general hospital. These features, such as laundry, pharmacy, and heating plant, are placed in the basement, and their presence will have little effect on the general design.

The main building is three stories high, with a basement under a portion of it. The basement is large enough to give space for pharmacy, locker room, elevator machinery, stores and disinfectors. The first story contains nurses' quarters, waiting, examining, dressing and toilet rooms, serving room and laboratory. The second and third stories are practically the same and contain the wards and their tributary rooms. Each ward unit provides:

Ward, capacity 8 to 12 patients.
Two quiet rooms, capacity 3 patients.
One nurses' room with toilet.
One diet kitchen.
Two linen closets.
One main toilet and cleaning gear room.
One independent stairway.

There are also two additional rooms, one on the second floor and one on the third floor, that can be used for the doctor and the head nurse, or oth-

air; and (8) the details of construction allow easy fumigation of rooms.

The building is roughly estimated to cost $80,000.00, without equipment, and was originally designed as a unit for one of the naval hospitals.

HOSPITAL OF TEMPORARY CONSTRUCTION

The plans submitted for a hospital of temporary construction do not provide such complete isolating arrangements as those shown for the permanent hospital. The layout is designed economically for temporary use with the idea of destroying the buildings when they are no longer necessary. With this intention in view the number of rooms is reduced to the minimum that would be necessary to care for an epidemic.

A small administration building is indicated, containing store rooms, lockers, disinfector and heater in basement; pharmacy, doctors' and nurses' rooms, kitchen and messing arrangements in first story, and sleeping rooms in second story.

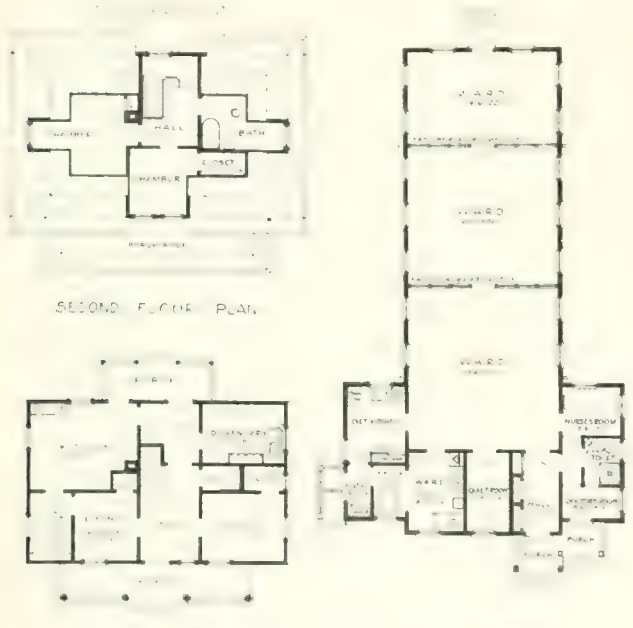


Fig. 3. Temporary administration and ward units.

The ward pavilion is divided into three portions to permit detention, observation and ward space. The partitions are glazed, are put up with screws, and can be easily removed. Doctors', nurses' and quiet rooms and halls provide a "circulation," permitting a doctor to change his clothing for his ward duties.

Heating is direct, steam or hot water as may be most practicable, with an exhaust fan in loft. Heat will be provided from a plant in administration building basement, or from a central system. General ward illumination is indirect, electric, with ample provision of wall brackets and receptacles. A silent call system and doctors' call systems are provided. An incinerator is installed in each pavilion for destruction of sputum cups, dressings and waste.

The buildings are of wooden construction with prepared or "ready" roof covering. The details of construction are simple and useless mouldings are avoided. The administration building, only, has a basement. Exterior walls are covered with "rustic" siding. Interior walls and ceilings are finished with a prepared wall covering of built-up wood strips, paper covered, or wood fiber sheets. A sized and painted cotton cloth is glued to the wall and ceiling covering. The cloth is painted after it is placed and finished smooth without gloss. Window and door trim is put on over the wall covering. Floors are of wood, waxed, except toilets and baths, which are of cement. The wall and ceiling finish will stand fumigating and washing without appreciable deterioration.

Patients will be brought in through the space marked "hall" directly into the ward and then to the toilet where bathing and dressing space is provided.

Food will be prepared in the main kitchen in the administration building, and carried to the diet kitchens, where steam tables and small gas or electric ranges are installed. Ward dishes will be sterilized in diet kitchens and will not leave the building; common containers will be washed and sterilized before being returned to the general kitchen.

The hospital is roughly estimated to cost $5,000.00 for each building, without equipment other than incinerators, ranges, and steam tables. The buildings were designed originally for a naval hospital.

STATE HOSPITALS COMPARED

Dr. Gahagan, of Elgin, Ill., Tells What He Saw on Recent Trip East

Dr. H. J. Gahagan, medical superintendent of Elgin (Ill.) State Hospital, who has recently made a tour of the Eastern state hospitals, has made some shrewd observations, which he purposes to incorporate in certain recommendations to the Illinois State Board of Administration.

He found that in buildings and industrial work the East was ahead of Illinois; that in the general care of patients the two sections are about abreast, though the East does not allow its patients nearly as much liberty as the West; that the East still holds to the principle of restraint by the use of many bars and wire nettings and canvas clothing; that in some of the Eastern hospitals none of the patients are allowed knives and forks, whereas in Illinois only the very small class of vicious and irresponsible patients are deprived of their use; that in the East patients are not given nearly as much outdoor freedom as in the West.

Dr. Gahagan will recommend that he be allowed to instal machinery for making clothes for patients; indeed, he has already been given such authority in the matter that on his trip he contracted for some of this machinery.

Fig. 1. Kleberg County Hospital, Kingsville, Tex.

FIRST COUNTY HOSPITAL UNDER THE NEW TEXAS LAW

Kleberg County Institution, Costing $35,000, Provides for Private and Free Patients, Infectious Diseases and Tuberculosis

By MRS. LENA SHENNERS, R. N., Superintendent

IN March, 1913, a bill was introduced, at the request of the Texas Anti-tuberculosis Association, by Senator T. H. McGregor and Representative Dr. L. A. Colquitt. The bill passed both the house and the senate and was signed by the governor March 26, 1913, and thereafter became known as the McGregor-Colquitt Hospital and Dispensary Law.

Under this law the legislature of the state of Texas made lawful an act authorizing the establishment of county hospitals and dispensaries, providing for the election for bond issues and the issuance of bonds for the cost of erection of same, providing revenue for maintenance and managing same, providing for the appointment of a board of managers and declaring an emergency.

The commissioners' court of any county is by this law empowered to acquire a site for a hospital and erect buildings for same, and to appoint a board of managers, consisting of five members, of whom at least two must be practicing physicians and one a woman.

This board appoints a superintendent of the hospital and fixes salaries, and also may establish and operate an out-patient department or free dispensary, and may appoint one or more visiting nurses, whose salaries are fixed by an appropriation made therefor by the commissioners' court.

The superintendent is the chief executive officer of the hospital, makes all other appointments and has general supervision thereof; however, working through the powers of the board of managers. This board is required to have monthly meetings at the hospital, thereby keeping up their personal interest in all its affairs, as well as a regular inspection of all its business.

The first county hospital to be built under this law has been established at Kingsville, Texas, and is known as the Kleberg County Hospital. It was opened to the public on January 20, 1915.

This building, put up at an original cost of $35,000, is built of reinforced concrete and is strictly

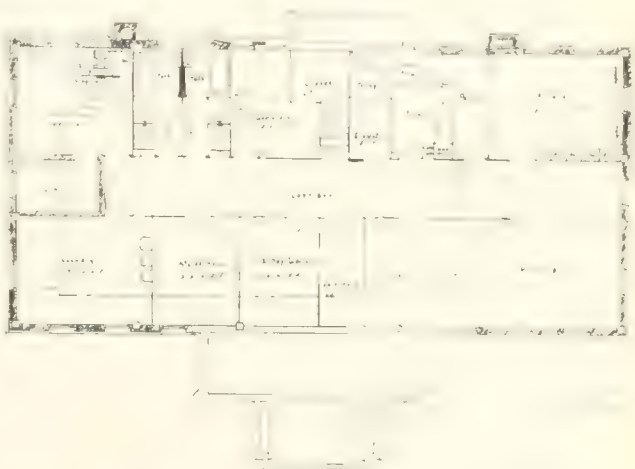


Fig. 2. Kleberg County Hospital. Basement plan.

modern in every point of building and equipment, including pathological and x-ray laboratories.

It consists of a basement, containing laboratories, kitchen, dining room, store rooms, laundry, furnace room, bed rooms and bath rooms for help.

The first floor has reception room, office, diet kitchen, bath rooms, and six wards, containing four to six beds each.

The second floor has the operating department, consisting of four rooms; a dressing room, bath rooms, diet kitchen, and eleven private rooms, and a sun parlor, which in this sunny Southland is an ideal feature.

The hospital has a forty-bed capacity, and has also two cottages of three rooms each, for contagious diseases and tuberculosis.

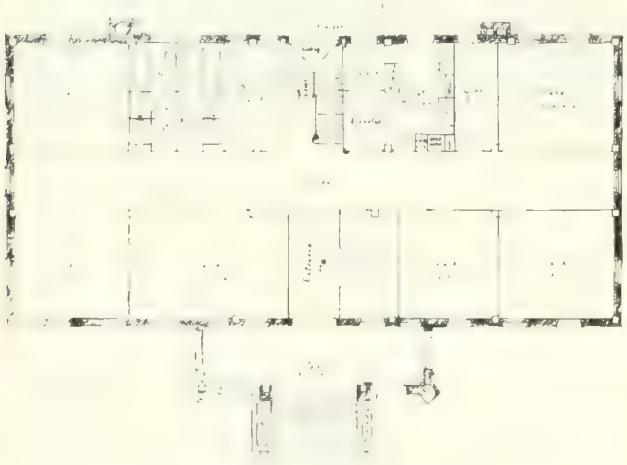


Fig. 3. Kleberg County Hospital. First floor plan.

The building occupies the center of a four-acre block, with beautiful lawns and trees.

Nowhere in Texas is the climate more ideally conducive to a return to health than in the southwestern portion, and Kingsville is in the heart of this region, and is easily accessible, since it is on the main line of the railroad.

Kleberg County was organized in August, 1913, being less than two years old, and Kleberg County Hospital stands as a positive proof of the enthusiasm and pride of its inhabitants.

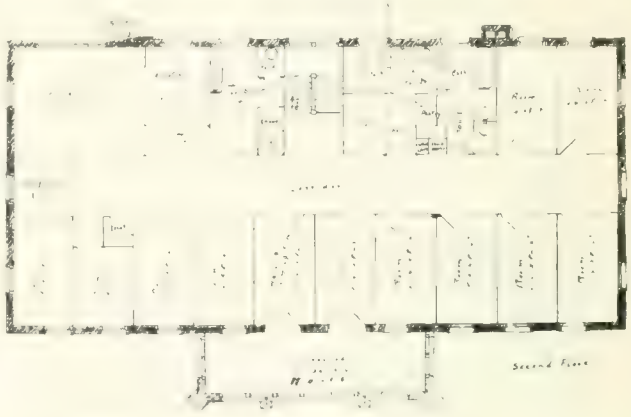


Fig. 4. Kleberg County Hospital. Second floor plan.

Mrs. Lena Shenners, R. N., was appointed superintendent of Kleberg County Hospital, and only graduate nurses of reputable training schools constitute the corps of nurses.

A hospital built under this law is no more a charity hospital than any other private or public institution, except as regards the care of the county's charges. All other patients are charged the usual hospital rates, and the board of managers is permitted to contract with any firm or corporation for the care of their sick.

Kleberg County Hospital is an example of what a county can do for those who live within its bounds, and an inspection of this institution is both interesting and instructive.

HOSPITAL NOISES AND HOW TO MINIMIZE THEM

Doors, Windows, Floors, Chairs, Chart Boards, Ward Utensils—In the Surgical Building—Employees—Signal Systems

By BYAM HOLLINGS, M. D., Assistant Resident Physician Massachusetts General Hospital

THE subject of unnecessary noises in and about the hospital merits some attention. If the hospital is located in an active part of the city, a hospital zone of quiet should be marked out by appropriate street signs, and the cries of children, the noise of teams, trucks and automobiles, should be limited by the city authorities to those that are unavoidable. In the hospital yard signs such as "Please run your car quietly" and "Patients in this building are seriously ill; please run your car quietly" may be found useful if the entrance is near the wards.

In the planning of a hospital the noise producing factors should receive consideration just as do the matters of sunlight, operating light, fireproof construction and economical maintenance. The sick room and ward should be planned to be in reality places of rest and quiet. In the hospital already constructed, improvements may be instituted to reduce the noise.

At the Massachusetts General Hospital it was found that in a routine day over 3,500 persons passed through a doorway in the main corridor of one of the hospital buildings in 24 hours. These figures give food for thought; the amount of noise that so many people create in handling

doors, chairs, utensils, or in walking, must also be considered. Today medical and surgical research requires the activity of great numbers of persons. One ward case is studied by the heart specialist and his attendants, another by the student of gastro-intestinal diseases, a third by the investigator of the respiratory organs. Some patients seem immune to noise; others suffer in silence. Still others, who, on account of their financial standing, feel more independent, do not hesitate to express themselves on many subjects, and noise is occasionally one of them.

Every hospital has its own problems, but possibly the following suggestions may be found useful:

Doors. If there are double doors, one leaf may rattle when held by a single catch. This is remedied by the double bolt, one at the top and one at the bottom, connected by a rod and manipulated by a handle at the middle. Door knobs and latches may rattle from a missing screw or some other neglected part.

Doors may slam; this may be corrected by the piston door check or the more expensive Corbin door check. The noise of closing doors and rattling latches may nearly be eliminated by a small four-inch square of three or four thicknesses of duck. At one side of the square is a loop which fits over the inner knob. The opposite side has two short tapes by which the square is held over the latch to the outer knob. When not in use the pad hangs by the loop on the inner knob. These are cheap and easily washed. They are best appreciated when tried, and nurses are unanimous in saying that they reduce noise and slamming.

Elevator doors when noisy are a nuisance to the architect as well as the hospital administrator. The solid metal thin leaf extension door with wire glass panels is probably the most satisfactory to close the elevator shafts. Gravity sliding doors moving on an inclined track need a buffer or compressed air device to eliminate the noise of closing.

Windows. Windows exposed to severe winds may rattle. A snug metal window strip obviates this and reduces the amount of cold entering. Double windows on the street in a private ward reduce the amount of noise entering, and also conserve the warmth of the room.

Floors. The ever useful battleship linoleum or the more expensive cork tiling reduces the noise of traffic in the corridors and wards. Rubber, as we obtain it, does not wear so well. However, a high-grade rubber matting, or tile, may last for years, but at best its length of life is doubtful. Rooms without door-sills and adjacent corridors equipped with dark green or brown linoleum are pleasant to work in and restful to the eyes.

Chairs. In the offices and wherever there are wooden floors, chair tips of the proper sort on all chairs are desirable. Rubber, felt and leather tips are not as successful as the oval, hollow, metal tip which fastens into the wooden leg by three prongs. With these attached the chair slides quietly, and the noise is reduced at least one-half. Wheel chairs in the wards and rooms should be inspected for squeaks and rattles. So also should the patients' trucks.

Chartboards. If these hang at the door frame or the head of the bed, the rattling due to a breeze or other disturbances may be eliminated by the use of a small brass tapestry hook to hold the chartboard snugly.

Ward Utensils. These numerous noise producers, such as bed pans, glassware, trays, and mealtime appurtenances, are best handled in rooms which are sufficiently isolated so that the noise, which is apparently unavoidable, may be muffled. More than one hospital administrator would be pleased if the ward diet kitchens or utility rooms were equipped with some feasible system of silencers. In some private wards the least desirable patients' rooms are those near these noise centers. Hence the attention given in new hospital construction to this question.

Surgical Building. Linoleum floors in operating rooms are found satisfactory. A dark shade of red, green or brown is good, and such floors are quiet and if properly cared for are nearly non-absorbent. Substantial white wooden instrument tables are light, quiet and satisfactory. If the floor is tile, white rubber close-fitting caps for the bottoms of the pails are a great aid for quiet.

If the stands where glass jars are kept are fitted with glass shelves, the noise from the contact is much reduced by a rubber covering to each shelf. The slamming of metal lids on hampers may be reduced by a little study and the use of split rubber tubing.

Employees. Those entering the wards as nurses, house pupils, orderlies, porters, and all employed about the hospital offices, should wear rubber heels. At night as well as in the day the supervisors should be alert for unnecessary laughing or talking in the vicinity of the patients.

Signal Systems. These have been the subject of much experimentation, the net results of which seem to approve the light signal for the patients and nurses. For physicians, the call system, by which the call may be sounded simultaneously in all parts of the hospital by one operator speaking the name at the central office, has also been found a great time saver, and when properly muffled has caused no complaint as a noise producer.

TRAINING SCHOOL ORGANIZATION AND WORK IN MENTAL HOSPITALS[1]

Necessity for Such Schools—Qualifications for Would-Be Nurses—Problems Which Arise When Organizing Schools—Curriculum of Study Must Meet Requirements for State Registration—Perfect Organization Rather a Matter of Evolution Than of Prescribed Form

By CORA McCABE SARGENT, R. N., Superintendent of the Training School for Nurses, Sheppard-Enoch Pratt Hospital, Towson, Baltimore County, Md.

THE training school for nurses as an adjunct of the hospital for the treatment of mental diseases came into being because of the insistent need of it. In fact, as soon as the veil of ignorance and superstition, which so long enveloped these disorders, was torn away, and they were recognized not simply as conditions, but as definite forms of disease or symptoms of disease, science made a most vital and far-reaching advance.

It became at once apparent that, if these conceptions were to be put to a successful practical test, the caretaker of former times, whose one asset was sheer physical strength and whose sole duty was to keep a watchful eye on the patient, must give way to the skilled nurse who could intelligently supplement the work of the physician. Not only must the nurse possess certain knowledge and skill, but she must also bring to bear upon her work a definite form of training suited to the illness with which she is to cope.

How were such knowledge and training to be gained?

The necessity for the training school for nurses for mental diseases thus suggested itself, and its varied advantages could not be gainsaid. The obstacles, however, in the way of its organization were many; and even today certain very definite prejudices and objections to such schools still exist, and are often most discouraging.

In the first place one must always be prepared to meet a deep-rooted fear of the insane and hence a great unwillingness upon the part of the would-be nurse to take up this branch of nursing. Again, the work demands certain peculiar qualifications in an applicant without which her training will be worthless. It demands education, inborn refinement, dignity, poise and an elastic temperament. The difficulty of inducing women with such qualities to take up a branch of work which upon the surface appears so unattractive, needs not to be pointed out, but they are the very characteristics which should unite to form the ideal nurse for the mentally ill.

To one who is organizing a school in connection with a hospital for mental diseases many peculiar problems are presented. If the prospective school is to be organized in a hospital where only attendants have been doing the work of the wards, it is most unwise, if not wholly disastrous, to initiate the new regime by dismissing the women already there, many of whom can give valuable assistance, and, indeed, are quite capable of becoming pupil nurses, and of forming the nucleus of a future school. Others may possibly be retained until such a time as their places can be filled by pupils, or, if the expense be not too great a consideration, graduate nurses may be employed until the school is on its feet. These are the problems which circumstances must solve.

The curriculum of study must also be worked out, in a great measure, for each individual school, the standard, of course, being that set by the requirements of state registration. No school can be put at once upon a thoroughly satisfactory basis. In fact, more often than not, it is the changes which are evolved from experience or necessity which round out a perfect organization. Each superintendent of nurses must work out her own ideals and become a law unto herself.

The following is an outline of the work being done by the training school of the Sheppard and Enoch Pratt Hospital, now entering upon its tenth year, which, by reason of the successful basis upon which it rests, one of evolution and development during all this period, entitles it to a hearing:

Since the organization of the school numerous important changes have been rendered necessary to meet the increased demands of the hospital upon the nursing department. The most radical and far-reaching change, however, was the extension of the period of training from two to three years, and the establishment of such affiliations with general hospitals as enable the graduates to meet the requirements of the state board examinations. The course of training as it now stands covers a period of three years, eighteen months of which time is spent in one or more general hospitals.

The executive staff at present consists of a superintendent of nurses and four assistants, the duties of three of whom comprise a general supervision of the wards. The fourth assists in the teaching of pupils, is responsible for the nurses'

[1] This is the seventh in a series of papers on "The Government of State Hospitals for the Insane." Last month appeared "Occupation of Patients in State Hospitals for the Insane"; next month will appear "The Treatment of Mental Diseases in a General Hospital."

home and the apartments occupied by domestics, and has complete charge of the hydrotherapeutic department.

There are eight head nurses whose personal responsibility includes the assignment of duties and the supervision of pupil nurses, post-graduates and maids. They are also responsible for ordering and using the ward supplies, requisitions for which are submitted to the superintendent of nurses for approval. Quite recently an instructor of domestic science has been added to the nursing corps. She is held responsible for the course in dietetics covering a period of four months, including weekly classes and practical demonstrations. Instruction in dietetics was formerly obtained at a school of domestic science in Baltimore.

The regular school year opens in October and extends over a period of eight months, during which time demonstrations, lectures, and quizzes are conducted regularly. Students may enter, however, at any time during the year as vacancies occur. Applicants must be between the ages of twenty and thirty-five years; must be possessed of a high school education or its equivalent, and be in good physical condition. A probationary period of two months is required. In the event of acceptance as a pupil, this time is counted as part of the regular term requisite for graduation.

In addition to regular daily hours off duty, the pupils are allowed one-half day each week for recreation and study, and every third Sunday all day. A vacation of two weeks is given annually between the months of May and October.

The following is an approximate division of the curriculum for three years:

	Lectures	Classes
Anatomy and physiology	8	20
Hygiene	..	4
Materia medica	6	20
Practical nursing	..	24
Urinalysis	1	..
Mental nursing	..	8
Invalid occupation and amusement	..	12
Hydrotherapy	..	10
Nursing ethics	..	10
General medicine	15	..
Infectious diseases	8	..
General surgery	8	..
Anesthesia	1	..
Ventilation and plumbing	6	..
Bacteriology	8	..
Bandaging	..	8
Massage	..	12
Mental and nervous diseases	18	6
Gynecology	6	..
Orthopedics	2	..
Obstetrics	8	..
Infants and children	6	..
Special diseases	3	..
Dietetics	14	14

Pharmacy—Two hours' practical work daily for two months.

In addition to the course of study outlined above, weekly conferences are held with the nurses in which the various patients and their illnesses are discussed by the physician in charge. An outline of the history is given, and the course of treatment to be followed is gone over and explained. This is done to give the nurses a clearer understanding of cases and to secure more intelligent and effective work.

It has also been found an advantage to hold classes for head nurses for the purpose of discussing the methods of the school in an informal way. Reports of nurses' work are submitted, and criticisms and suggestions are invited with the object of promoting a greater spirit of unity and establishing more uniform methods of work.

To qualify them to amuse patients or to teach them simple occupations suitable for reeducation, our nurses are trained in methods by a course of invalid occupations and amusements, which is worthy of a fuller description.

This course, comprising at least twelve lessons, is carried on by one of our graduates and is as follows:

1. Games of cards, especially games of solitaire, dominoes, checkers, and the use of simple puzzles.

2. String work and weaving. Knot tying and its application to the fabrication of useful or ornamental articles.

3. Paper folding — making envelopes, caps, frames and boxes. Paper cutting, such as making stars, paper dolls, cut-out pictures.

4. Pamphlet stitching—scrap books and binding.

5. Crepe paper work.

6. Basketry—weaving from reeds.

7. Simple embroidery.

(In all the above subjects talks are given to simplify the subject and to explain methods.)

8. Wood work. This consists of a demonstration of simple wood carving, and of practical work in the shop in making simple objects, such as paper knives, canes, trays, bird houses, wind toys, stools, etc.

9. Leather work. A demonstration of the technic of carving and hammering leather is given.

10. Metal work. This consists of practical work in Venetian iron work, hammering copper, making copper ornaments, initials, paper cutters, etc.

Each pupil is also given a certain definite amount of practical experience and instruction in calisthenics, bowling, serving tennis, and games such as volley ball, dodge ball, etc.

The demand for instructors in this particular course is growing so rapidly that it is now our intention to give those pupils who show any especial adaptability in this line of work especial instruction so as to fit them for any future similar work here or elsewhere.

The post-graduate course offered by us to grad-

uates of other schools continues to bring in pupils. There is each year, however, less opportunity to offer this instruction, owing to the increase of our own staff of pupils and the consequent lack of room. The value of this branch of nursing is rapidly being recognized. It has proved to be a work so rich in possibilities and interest that it would seem that a nurse who takes a course of training in a hospital for the treatment of mental diseases before taking a general hospital training has every advantage in that she has such excellent opportunities to acquire self-control, self-reliance, patience, and tact; all necessary assets of the successful nurse.

THE HOSPITAL LIBRARY—BOOKS FOR THE PATIENTS[1]

Plea for a Trained Librarian—Administration—Selection of Books—Separate Children's Library—Library Technic—Distribution of Books—The Library as an Adjunct to Other Departments

By EDITH KATHLEEN JONES, Librarian McLean Hospital, Waverley, Mass.

PERHAPS no other branch of service to the public has grown so rapidly in the last few years as that of the hospital. Cities and states vie with each other in maintaining the finest buildings, the most efficient equipment, the most prominent staff of surgeons and physicians, the best training schools for nurses; private hospitals and sanatoriums have multiplied throughout the land. All departments of science and industry are requisitioned, not only to care for the immediate physical needs of the sick, but also to minister to their minds and train their hands to work which may enable them to earn their livings when dismissed from the hospital as well as help them over many tedious hours of convalescence.

With the baths and the Zander apparatus, the diet kitchen, the handicrafts school, the social service department, all commanded by experts, the library now holds an important place, as it becomes more generally recognized what an essential part is played during convalescence by the right books efficiently administered. The old idea of a library as a mere collection of books, few of intrinsic value, most of them so out of date as to be unreadable, all of them with any outer attractiveness they may possess completely disguised in brown paper uniforms and arranged on the shelves without any logical sequence—a library which runs itself, for all the interest anyone takes in it—this old idea happily is passing. The modern, up-to-date hospital knows the value of an equally modern and up-to-date library, in which new books that people want to read are purchased while still new, and taken to patients who will be interested or benefited by them; in which the librarian co-operates with the physician and the nurse for the mental and therefore physical welfare of the patient.

The state and private hospitals for mental diseases have long recognized the need of books in their work, even though comparatively few of them have had, until recent years, organized libraries. That the general hospitals also are convinced of the value of the patients' library is shown by the fact that in the plans for some of the new hospitals recently erected, that department is provided for. The Burke Foundation for Convalescents, at White Plains, N. Y., the Robert Brigham Hospital for Chronic Cases and the Peter Bent Brigham Hospital of Boston, all have included libraries as a necessary part of their equipment. The Boston City and the Massachusetts General Hospitals long have maintained such libraries, and the latter is planning for a bright, cheery reading room and library for patients in its new administration house, as well as for a spacious and well equipped medical library. Nearly all the smaller hospitals have books, if not organized libraries.

The value of the library being conceded, the question remains, how can it be most economically created and efficiently maintained?

Without doubt, for the larger hospitals, general and mental, an organized, central library, with a trained and experienced librarian in charge who shall have full power in the selection and buying of books from a definite, annual appropriation, offers the most logical, the most practical and the most economical solution of the problem.

A PLEA FOR THE TRAINED LIBRARIAN

It must be confessed, however, that the hospitals maintaining such libraries are not many. They may have books, they may have a central library; but in most cases this is not classified or catalogued, and in nine cases out of ten there is no trained librarian. Just why the hospitals, of all institutions, who require experts in every other department, should almost invariably ignore

[1]Next month there will be published a paper on The Medical Library, by Mrs. Grace Whiting Myers, Librarian, The Treadwell Library, Massachusetts General Hospital.

this need in the library, has long been a matter of much speculation among librarians. It cannot be on account of expense, because—although it may leave an untrained person to wrestle as best she can with the technical problems of the patients' library—when the medical library requires cataloguing and classifying, the hospital almost invariably calls in an expert from outside—and pays expert prices. Now suppose the hospital has employed a skilled and experienced librarian for a few weeks and has got its medical library in good working order. The expert goes. New books arrive. Who is going to classify and catalogue these? Who is going to look up the half-forgotten reference for the doctor who is working on an important case? The untrained person who has charge of the library—who, whatever her other qualifications, knows nothing of library technic and probably is unacquainted with French or German? Or must an outside expert again be called in—at expert prices?

Instead of the trained librarian in the hospital, who can manage both libraries, what have we? Usually a much overworked person who does wonderfully well under great handicaps, but who has to work out all technical problems for herself at a great waste of time and energy. In most cases she combines the care of the library with that of some other department—stenography, drugs, handicrafts, recreations, or social service —either one of which really requires all her time and thought and strength. Here is what almost invariably follows: 1 job which takes all one's energy + another job which does the same = 2 jobs half done + 1 worn-out woman. Does the hospital gain or lose in such service?

On the other hand, a trained and experienced librarian has at her fingers' ends the technic which seems so elaborate and hopeless to the untrained person. Her training presupposes a college education or its equivalent, therefore she will know something of French and German and be able to catalogue foreign medical books and look up references. She should be perfectly capable of taking full charge of both libraries, so that no outside help will be needed. She knows editions, and how to buy books, and will study the needs of the general library to build it up intelligently. Moreover, from her superior education, she should be able to help the nurses greatly by suggesting books for them to read and by giving them lectures on books and reading, current events, or the history of art. Such "culture courses" are invaluable to the nurse in her practice and already are being made a feature in certain training schools. It would certainly seem that the trained librarian is worthy of her hire.

ADMINISTRATION

Since the central library, with books loaned from it for longer or shorter periods of time to wards or cottages as well as patients, is now generally conceded to be much more efficient in its workings than the old bookcase with its never-changing books on the wards, this subject need not again be discussed. The next question is of details of administration.

In the first place, the hospitals fall naturally into two classes: those for general, or acute physical and surgical cases, and those for chronic cases and mental diseases. In some departments the two can be administered by the same methods, but the libraries of these two classes call for quite dissimilar treatment in certain respects. The general hospital, whose patients stay only for a few days or weeks, demands a different class of books and a more simple technic than the hospital for mental diseases or chronic cases, whose patients often are detained for months and years.

SELECTION OF BOOKS

Naturally, the first thing to be considered in either the general or the mental hospital is the selection of books and magazines. It is especially important to subscribe to many of the latter, because they are light and easy for weak hands to hold; they have many pictures and short stories and articles. But these, with few exceptions, should be new and current numbers. If there is one thing that those responsible for the selection of reading matter for hospitals overlook, it is that even though the personnel of the patients is continually changing, the books in the library are not peculiar to that library, but probably have been read and re-read by the patients before coming to the hospital. They want something new. They want the latest magazines and the latest fiction.

Here enters the question, how shall these new books be secured and who shall select them? Usually there is no system about this; there is no definite fund for books; a few are donated from time to time, and the superintendent or the board of lady visitors select those which are purchased. Without going into the pros and cons of this method, perhaps it will be sufficient to say that, in every case known to the writer, that hospital which has a definite sum, however small, with which to buy books as they are published, is firmly convinced that this is the only solution of the buying problem, and those librarians are happiest whose trustees allow them to select the books, having become convinced that the librarian, who comes in contact with her readers and quickly learns the sort of books demanded, is therefore a

more competent judge than anyone else of what should be in the library.

The librarian knows that new fiction is demanded; that small, light-weight books of colored pictures or interesting short stories are eagerly taken; that her foreigners' eyes light up with joy at the sight of a readable book in their own language. And she will not make the mistake of one lady visitor, who, out of the kindness of her heart but ignorance of books, sent in an indiscriminate order to her bookseller for "some books in Yiddish." The books came and were duly presented to several Jewish patients in turn, who received them politely but without enthusiasm. Finally the librarian asked one very well-educated and cultivated Jew to tell her what the books were about and why no one read them. He, hesitating for fear of hurting her feelings, explained that they were Christian Bible stories told for children!

For the general hospital, few books other than fiction and pictures will be much in demand by patients, though books of travel and art and some of the best out-of-doors and "nature" essays should be on hand in case they are wanted, but in the hospital for chronic cases or mental diseases, while plenty of fiction and the best of the new novels should be supplied, the other departments also should be built up. Travels, history, biography, art, literature, science, sociology—all these should be represented by the best books for the purpose on each subject. Books dealing with current events should be bought as published. All sorts of persons with all degrees of education will be found in these hospitals, and their tastes must be consulted, although great care must be taken that morbid, gruesome, over-emotional and too sentimental books are not included in a library of this sort.

The children must be especially considered when books are selected, and plenty of wholesome fairy stories and animal stories and books of adventure provided for them.[2]

LIBRARY TECHNIC

The books having been selected, the next thing is to arrange them on the shelves in some logical order, and provide some sort of list or catalogue by which they may easily be found. In the general hospital, where there is little but fiction, any but the very simplest classification is manifestly absurd. The fiction may be arranged on the shelves alphabetically by authors, by means of the Cutter author-table to three figures, and what little else there is—art, travel, etc.—may be indicated by a class figure before the author number. It is generally found more convenient to keep children's books by themselves. It is doubtful if any catalogue is needed, unless for the sake of the librarian, who probably will know every book without its aid. An accession book may be kept, but experience has shown that the only really essential catalogue is a card shelf list: that is, a card for each book, with number, author and title, arranged in drawers or boxes according to number.

The hospital for mental diseases presents a different problem. Because of the greater number of subjects in its library and because of the fact that the patients probably will use a catalogue to some extent at least, the library technic, while still as simple as possible, will of necessity be more elaborate than in the general hospital. Books must be classified and catalogued in order to be easily found and to show what subjects the library owns. Except in very small libraries the shelf list will not be enough.

There are many ways of charging books, but the simplest and most efficient seems to be by means of a book-pocket pasted on the inside of the back cover of each book, on which the date when the book becomes due is stamped; a book-card bearing number, title and author, which is kept in the pocket when the book is on the shelf and is inscribed, when taken out, with the ward letter or number or the patient's name; a box with date-index cards, in which the cards of the books taken out are placed behind the corresponding date.

The question of covers or no covers on library books has long been a burning one. Nearly all the public libraries have now discarded the paper covers, realizing how much more attractive are the bright book covers. Some libraries shellac their children's books. Little by little the institutions are adopting the new method of discarding covers, which certainly has everything to recommend it. Theoretically, books get soiled by handling, but in reality, a modern, hygienically conducted hospital with its scrupulously clean patients, would seem to offer the least possible chance for contamination. As far as contagion goes, old books are usually sent to the contagious wards and then burned. There is really less chance for a book to acquire dirt or germs in a hospital than in the ordinary tenement home to which so many public library books are loaned, but if it is a question of paper uniforms or shellac —why not try shellac? It can be washed.

DISTRIBUTION OF BOOKS

With the ordinary library routine thus reduced

[2] There has recently been published by the A. L. A. Publishing Board, 78 E. Washington street, Chicago, an annotated List of Books for Boys and Girls, by Miss Hewins, which should be a great help in providing reading for children in hospitals.

to its simplest terms, the librarian has all the more time at her disposal for getting books to the patients. That hospital which can make of its library a pleasant reading and lounging room accessible to all but bed patients, is much to be envied. McLean Hospital has such a central library, and the Burke Foundation, mentioned above, is a good example of this class among the general hospitals. They have there about 600 volumes, 400 of which are in the main library and 200 in the boys' branch; three-quarters of all these are fiction; they have about a hundred books of pictures. Patients go to the central library if they are able, but the wards and cottages are kept well supplied. Although this hospital is so very new, patients and employees are using the library to a degree beyond all expectations.

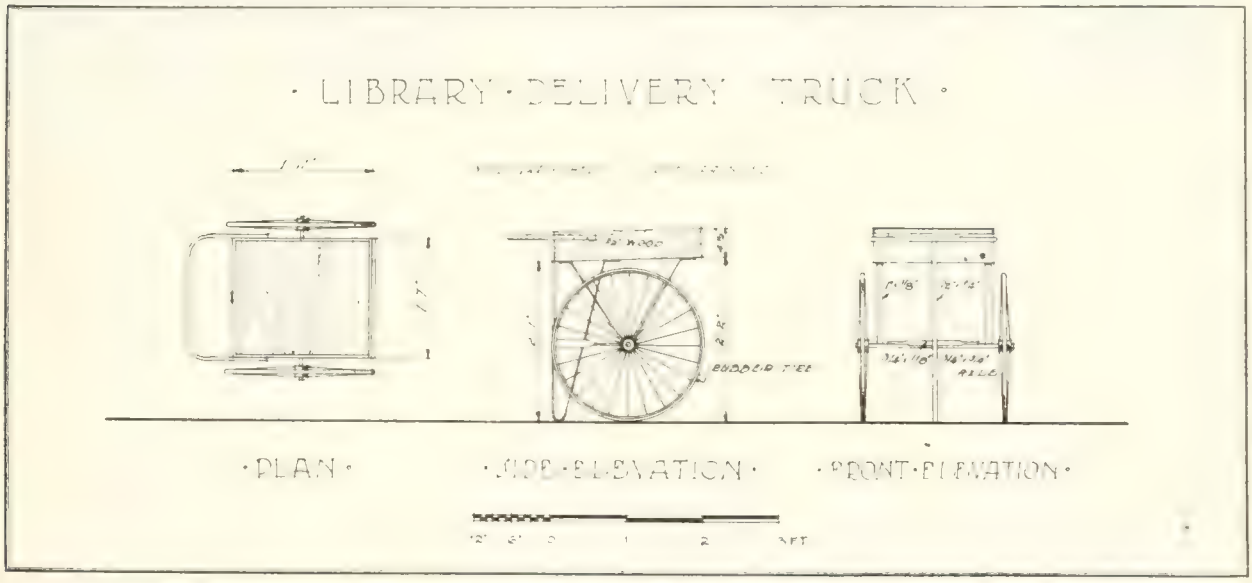
The Massachusetts General Hospital has an ingenious scheme for getting books to its patients. They have had made a small hand-cart just the height of the beds.[3] Every afternoon from two till three the librarian spends in one of the wards (taking them in turn, one ward each day) with this little cart piled full of books suited to that ward; the cart is pushed up to each bed and the patients thus can make their own selections. If they ask for any particular book not in the cart, the librarian sees that it is sent to them. Nurses are expected to help the librarian by calling her attention to new patients, and by trying to interest their patients in books.

In the distribution of books in the hospitals for the insane, the cooperation of the nurses, especially the head nurses, is indispensable; for here are, not physically ill or convalescent patients with a normal outlook on life, but patients whose inner vision is distorted, who must be coaxed and urged to interest in things about them. With such, it is not enough for the librarian to leave a book; the nurses must see that it is not destroyed and must try to arouse interest in it. Often it is the nurse who finds out what the patient really wants, but the librarian must be able to give him just that sort of book. There is much opportunity here for the librarian to co-operate with the doctors in selecting books for individual cases —depressed, delusional or excited.

THE LIBRARY AS AN ADJUNCT TO OTHER DEPARTMENTS

That that library is not using its possibilities to the fullest extent which caters only to its patients, is another idea which is gaining ground. Nurses and other employees are quick to respond to its privileges offered them, and the nurses' home might well be considered a branch to which suitable books are loaned. Of course, to be really valuable, this means that many books other than fiction must be bought.

In the handicrafts department, the library can be of great assistance if it is able to buy books telling how to make baskets, rugs, pottery, etc., and books and periodicals on decoration and design. McLean Hospital supplements its arts and crafts department by a card catalogue, jotting down the volume and page of some particularly pleasing shape for pottery or basket, bit of ornamentation for leather work or wood carving, a hint which might be used in weaving. Already this catalogue has been used sufficiently to compensate for the little trouble it is to make it.



Library cart, in use in the Massachusetts General Hospital.

[3]See article by Dr. F. A. Washburn, entitled "Hospital Furniture in Use at the Massachusetts General Hospital," in THE MODERN HOSPITAL for November, 1914. (Vol. III, p. 335.)

Fig. 1. Edward W. Sparrow Hospital, Lansing, Mich.

THE EDWARD W. SPARROW HOSPITAL, OF LANSING, MICHIGAN

An Institution That Grew From a Small Beginning and Now Meets Well the Needs of an Appreciative Community

By MAUDE LANDIS, A. B., R. N., Superintendent

MICHIGAN seems especially fortunate in having influential citizens who recognize the needs of sick humanity, and who show their interest in the promotion and conservation of health by erecting beautiful hospitals on spacious grounds and bestowing these architectural gifts on the cities in which they have lived and amassed their fortunes.

The Edward W. Sparrow Hospital, of Lansing, Michigan, bears the name of its donor, who lived just long enough to see his gift a reality.

Nineteen years ago a Woman's Hospital Board was organized for the establishment of a hospital for Lansing. With a history of ups and downs, like that of others of small beginnings, it grew and grew. A general interest and appreciation of its need were awakened, and later in the course of time a residence and lot were purchased.

Mr. Sparrow became interested, made a gift of the adjoining lot, added a wing for the operating rooms, and furnished it. In time the enlarged residence became inadequate. During this history-making period a Young Woman's Hospital Auxiliary was formed to help in supplying bed linen, blankets, napery, and such emergency needs as might be apparent.

In 1910 Mr. Sparrow unconditionally donated $112,000 for the purchase of a site and the erection of a new hospital, which was completed in 1913. At a dinner to which he had invited friends among whom he had grown up, for the purpose of making known his great plan, he appointed them a self-perpetuating board of trustees. He also made known to them his wish that they delegate the operation of this new hospital to the Woman's Hospital Board, which had managed "the little old" hospital so wisely and so well. And then he presented this beautiful hospital to the citizens of Lansing.

The city of Lansing has always been interested in the growth and activities of this hospital, but this interest was not expressed in the appropriations, for a city government finds many places in which to sink funds. However, no definite demands have ever been made, and in time the appropriations may be increased. Local societies, lodges, organizations, churches and private citizens have furnished rooms and equipment, and

proud indeed may the citizens of Lansing be of the gifts so generously bestowed.

The Edward W. Sparrow Hospital is located on spacious grounds on East Michigan avenue, about one mile east of the State Capitol.

The architecture of the building is unusual and

Fig. 2. Edward W. Sparrow Hospital. One of the diet kitchens.

unique. It is a three-story, vitrified brick, concrete and hollow tile building, with sun parlors at each end, supported by full-length Corinthian pillars. A porte-cochere, in front, is supported by the same style of columns. The body of the building lies due east and west, with wings at angles of 45 degrees towards the front. This affords direct sunlight in some rooms all day long. At the back of the building are the power house and laundry.

The building is fireproof, all the windows are of French plate, the stairways are of iron. The two sets of inside stairways take the place of the usual unsightly exterior fire escapes. The floors are of concrete, with an eighteen-inch border of asbestone, which continues upwards to form the baseboard. The floors in corridors and rooms are covered with brown battleship linoleum, reducing to a minimum the pain of aching feet of busy nurses, and preserving a silence, otherwise impossible, for the patients.

The rooms are of good proportions, well lighted by electricity and daylight, and steam heated. Most of the rooms are for private patients. The wards contain two, four, and five beds. The beds in the wards are of the "convent style," affording each ward patient as much privacy as possible.

The building is so wired that when the bright lights are not needed the current may be thrown on to another circuit, whose globes are red, producing the dim light that psychologically permits greater quiet.

The building comfortably accommodates sixty patients. There is so much demand for hospital facilities that reservations have to be made for most patients, although emergency cases are admitted whether or no. A building of twice the capacity is really needed.

The building is equipped with a ventilating system, which is run by electricity, and changes the air every seven minutes. The heat is automatically controlled by air compression. The silent signal system for nurses' call is installed. There is a large automatic electric elevator, also an electric dumbwaiter.

The interior finish is oak, carefully chosen, beautifully grained; in some places this oak is white enameled, depending on its use in the hospital. The banisters are of mahogany; Florentine glass is used in service room doors and in all the transoms.

The length of each corridor is twice cut by double full-length glass doors, so that any noise in one part of the floor need not disturb the patients in other parts of the same floor. The bath rooms are white tiled; the tubs and sinks are of porcelain, and each floor is provided with a steam pan sterilizer and a warming oven for the bed, douche pans and blankets.

On the ground floor (two-thirds above ground) are the main kitchen, dining rooms, class room,

Fig. 3. Edward W. Sparrow Hospital. One of the operating rooms.

special nurses' dressing room with adjoining bath, store rooms, drug room, central linen room, and x-ray department.

On the first floor are the office, the board room, the superintendent's suite, private rooms, male

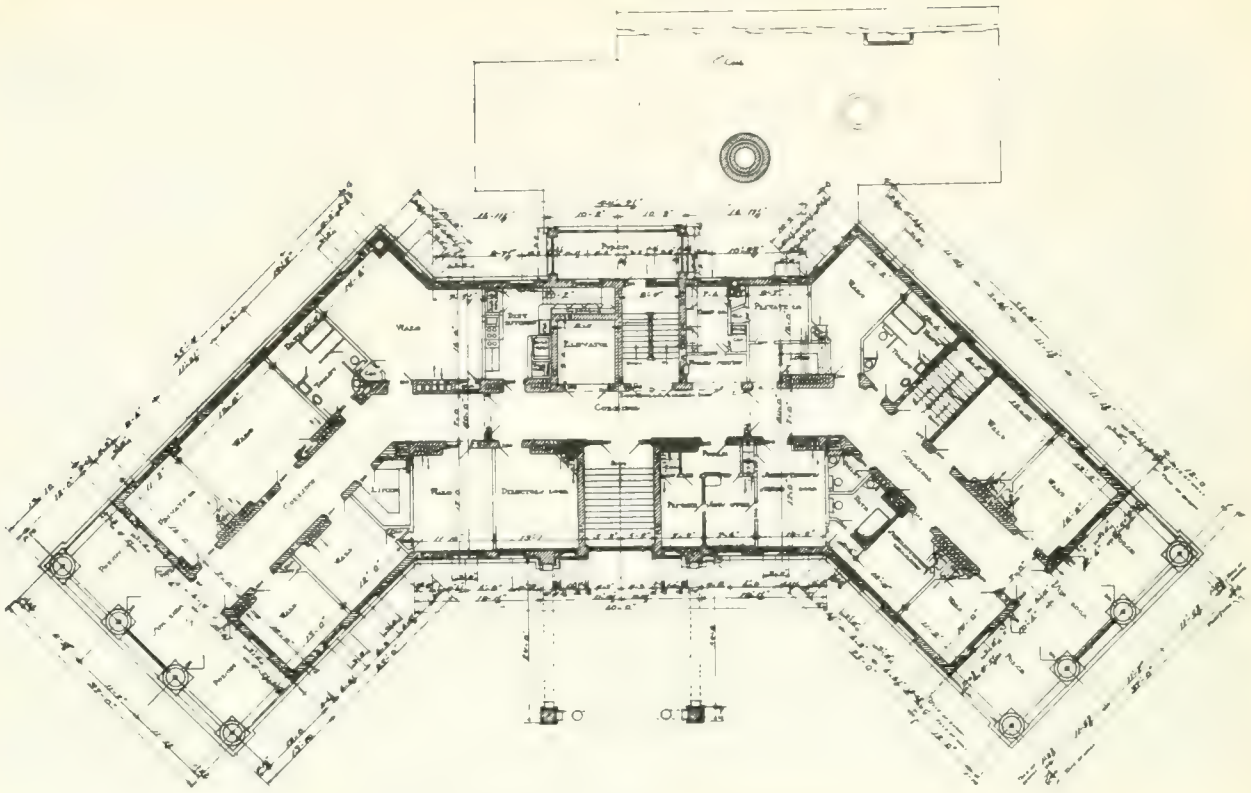


Fig. 4. Edward W. Sparrow Hospital. First floor plan.

wards, nurses' station, diet kitchen, service room, linen closet, and sun parlors and porches at both ends of the corridor.

On the second floor are the private rooms, female wards, children's ward, nurses' station, diet kitchen, service rooms, linen closet, and sun parlors and porches at both ends of the corridor.

On the third floor are some private rooms, convalescent female ward, nursery, maternity department, with delivery room; the operating rooms, the sterilizing room, surgical work room, doctors' dressing room, nurses' station, diet kitchen, service room, and sun parlors and porches at both ends of the corridor.

The surgical department consists of two large, well-lighted operating rooms, with white tiled floors and high, white vitrified tile wainscoting. The walls and ceilings are painted a soft but decided green. These rooms are equipped with the latest models of operating tables, cabinets and enameled iron furniture. Between the two operating rooms is the sterilizing room, with its specially built autoclave, hot and cold sterile water tanks, instrument and pan sterilizers, heated by high-pressure steam. Adjoining, but not connected with the operating rooms, is the work room, generously supplied with lockers and drawers for supplies and instruments. Across the corridor is the doctors' dressing room.

There is a diet kitchen for each floor, equipped with a large steam oven, and copper-covered steam table for hot food, a tray rack, a built-in cupboard and drawers, serving table, refrigerator and ice-box, running hot and cold water. Realizing the great importance of satisfying the patients by careful attention to diet, the hospital has spared no expense in making the food palatable and the trays attractive. The dishes are distinctive, of Syracuse china, the silverware good, and kept in the best of condition, the napery generously supplied, the glassware of good quality and well polished. The walls and woodwork are white enameled and the floor is of red tile. Two maids do nothing but keep these three diet kitchens in immaculate order. The trays are served from each diet kitchen, although the food is sent from the main kitchen on the ground floor; special diets, however, are prepared by the dietitian and two student nurses in the diet kitchen on the ground floor. Between 3,000 and 4,000 trays are served monthly.

The laundry has been equipped after plans made for the hospital by a well-known laundry machinery company. The machinery consists of a washer, an extractor, a large three-roll mangle, electric irons with boards, and a drying room, which also provides for the sterilization of all the mattresses as soon as the patients have left the hospital.

Above the power house is an isolation unit, built for the accommodation of such contagion as often develops in a hospital. It consists of the patient's

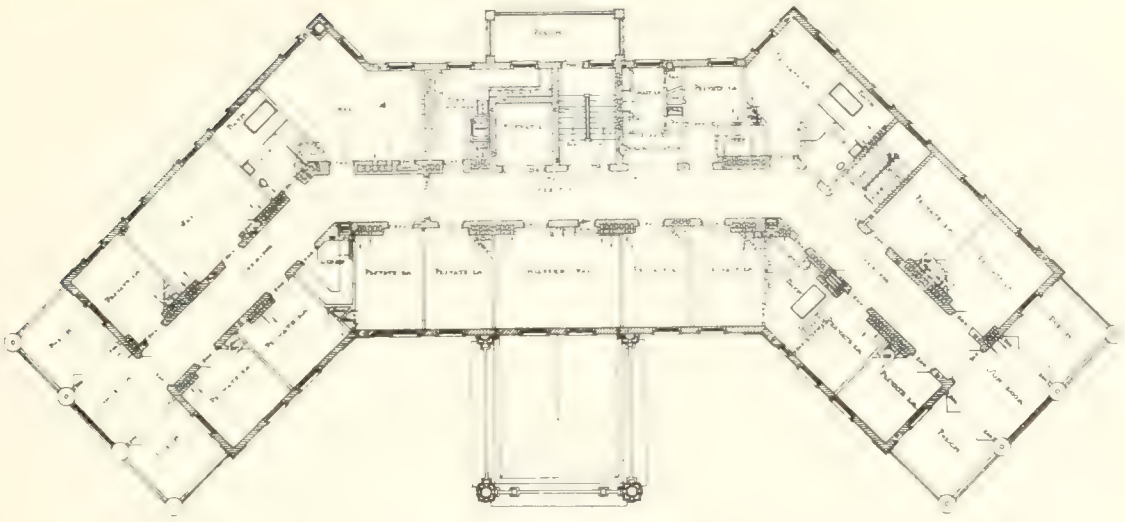


Fig. 5. Edward W. Sparrow Hospital. Second floor plan.

room, the special nurse's room with connecting bath, and a kitchenette, and is in telephone communication with the hospital. It can be reached by an adjustable outside stairway. This was built at a cost of $1,700.00 after the hospital proper had been in use and when Mr. Sparrow appreciated just what emergencies might arise.

The State Accident Fund has installed on the ground floor of the hospital one of the most expensive and best built x-ray machines and attachments. For the housing of this apparatus the hospital gets the benefit of increased patronage and derives great satisfaction in the knowledge of its up-to-date equipment and service. With the completion of the nurses' home more space, now in use, can be given to this valuable hospital service.

There is also a room for the use of the graduate nurses who enter the hospital for special patients. It may be used as a dressing and rest room during their hours off duty. It has its adjoining bath room.

The nurses' dining room is commodious, light and airy. Wholesome food, well prepared and served, clean napery, polished dishes and silver are a part of the well-regulated plan for retaining healthy, happy, satisfied nurses. There is a large class room, in which are held not only several classes and demonstrations for the student nurses daily, but chapel services every morning.

The services offered by this small, busy, general hospital are surgical, medical and obstetrical, and include the treatment of children. The children's department needs encouragement, although there are usually three or four "kiddies" in this ward.

For the conduct of this busy institution there are required a superintendent, a day supervisor, an operating room supervisor, a night supervisor, a dietitian, and graduate nurses as heads of each floor, with the training school numbering 25 nurses, a bookkeeper, two cooks, two engineers, one janitor, three laundry helpers, and five maids.

There is in course of construction a nurses' home, which will accommodate forty nurses. It has been given to the hospital by Mrs. Edward W. Sparrow, of New York City, and this substantial evidence of interest is gratefully acknowledged. The home will be modern, with a reasonable number of bath rooms. It will be heated from the hospital power, lighted by electricity, and gas will be piped in for emergencies. The walls of the night nurses' rooms will be deadened and separated as much as possible from the noises of the home. There will be two reception rooms, with built-in bookcases. The basement will be finished appropriately for large recreation room or classroom. It contains also a small nurses' laundry and trunk room.

While proper care of the patients is the first and main consideration, it is also considered important that special attention be paid to the securing of young women of good education and morals as student nurses.

The curriculum, recently suggested by the Michigan State Board of Education for Nurses, points plainly the requirements of the training school. It is necessary that the student nurses be given value received for services rendered, which is the tuition they pay for their training. Student nurses are most responsive to interest and enthusiasm shown by instructors, and it behooves the faculty to encourage in all possible ways this growing interest.

Lansing furnishes a most attractive locality for a hospital and nurses' home. It is the capital city, it is a home city, it is a college city; with the state library easy of access, with musical and literary programmes often open to the public, and with

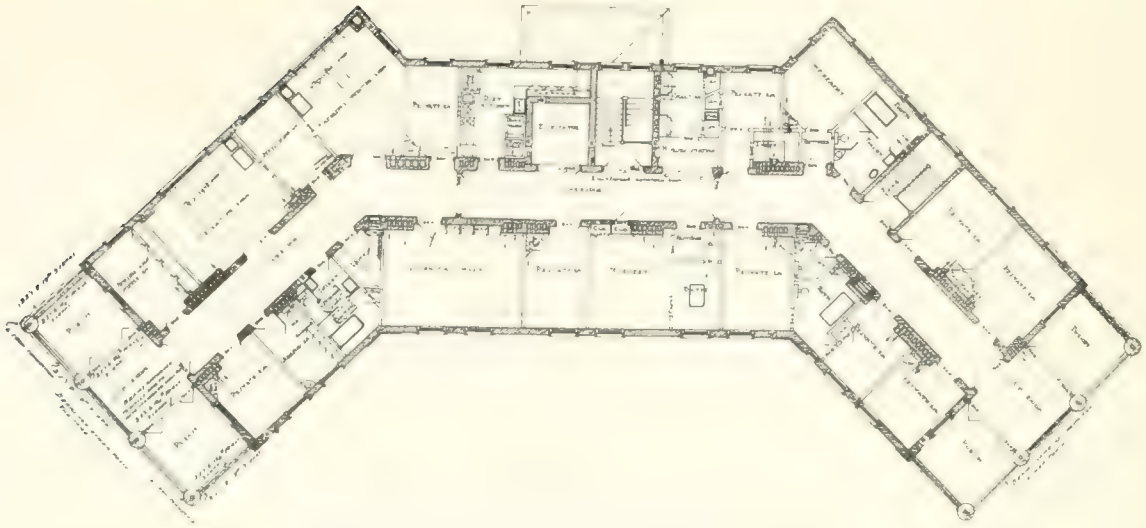


Fig. 6. Edward W. Sparrow Hospital. Third floor plan.

comfortable houses and attractive environment it is not to be wondered at that the student nurses average high in their state examinations.

Only young women, over eighteen years of age, of good morals, with one year high school credit at least, are considered. Church membership is preferred. Uniforms and books are not provided, but a monthly allowance of $6.00 and $10.00 is made for their purchase by the student nurse.

The probationary term is for two months, although the preliminary term lasts six months, during which time the nurses have daily classes in general nursing, elementary anatomy and physiology, materia medica, dietetics, solutions, English, arithmetic and ethics.

There are the usual junior, intermediate and senior classes, for the course is of three years' duration. Members of the faculty, local doctors and college instructors have charge of the classwork.

High ideals are set for the students; state registration is required of them. Monetary consideration, as an aim, is discouraged. Womanly sympathy and usefulness, and professional skill and efficiency are taught.

The Edward W. Sparrow Hospital has no staff. Each patient admitted has his own doctor. The city physician, an educated man of broad interests and humane sympathies, responds to all emergency calls, and he assigns such patients, if need be.

Here, as everywhere, there are many people who do not care to make application to the city for assistance, but who signify their desire to make small payments when possible. Their intentions at all times are the best, but force of circumstances often defeats their ability. There are those whose need is at once apparent; no needy patient nor "emergency" is ever turned away, nor any hard-luck story regarded too suspiciously. Because of these conditions, generally recognized, the hospital becomes the burden bearer. This hospital charity is willingly assumed by the board of control and is a measure of its share of the world's work.

Another fiscal year has just been closed. The reports show that at the beginning of the year there were 42 patients in the hospital; 1,205 patients were admitted during the year; 1,134 patients were discharged; 68 patients died; 45 patients remained in the hospital at the end of this year of reckoning. The mortality for the past year, therefore, was 5 percent.

EUGENICS SOCIETY CONDUCTS STUDIES AT SING SING

Organization Supported by Mrs. Harriman Will Undertake to Classify Criminals

The Eugenics Record Office, founded and maintained at Cold Spring Harbor, L. I., by Mrs. E. H. Harriman, has begun an exhaustive and systematic study of the inmates of Sing Sing Prison, under the direction of Dr. Charles B. Davenport. According to reports the family history of every convict will be traced and analyzed, the primary aim being to find to what general type of criminal each belongs.

Those who have associated themselves with the Eugenics Record Office favor the sterilization of certain classes of criminals and other defectives. The Board of Scientific Directors is composed of Alexander Graham Bell; Dr. W. H. Welch, of Johns Hopkins Hospital; Dr. L. F. Barker, of Baltimore; Prof. Irving Fisher, of Yale University; Dr. T. H. Morgan, of New York City; Dr. E. E. Southard, of Boston, and Dr. Davenport.

In 1912 the New York legislature passed an amendment to the Public Health Law, creating a board of examiners, with power to sterilize criminals and mental defectives in state institutions, but the application of the act awaits the outcome of a suit by the attorney general to test its constitutionality.

THE BAKER SANATORIUM AT CHARLESTON, SOUTH CAROLINA

A Privately Owned Institution Containing Wards and Private Rooms—Represents the Best Ideals of Southern Hospital Architecture—Its Equipment Luxurious and Complete

By J. D. NEWCOMER, Architect, Charleston, S. C.

THE Baker Sanatorium, Charleston, S. C., as it stands today, is a monument to the public spirit and foresight of Doctor Archibald E. Baker, and is the only privately owned hospital in the city.

The sanatorium overlooks the placid expanse of Colonial Lake, surrounded with its beautiful flower beds and shaded promenades at the intersection of Ashley avenue and Beaufain street. From the broad solariums and rooms of the sanatorium the panorama of the Ashley River and the wooded shores beyond afford a pleasing vista for the convalescent. This location of the sanatorium admits of the purest of air and coolest of temperatures desirable. The neighborhood being residential, the usual noise incident to the city's traffic is wholly absent. The charming exclusiveness of location enhances the value of the sanatorium and greatly inures to the benefit of both patient and physician. While the sanatorium is in a quiet section of the city it is readily accessible.

Before designing this building, Dr. Baker, accompanied by the architect, Mr. J. D. Newcomer, of Charleston, S. C., and Mr. E. V. Richards, of Bennettsville, S. C., associate, visited the most modern institutions of the south, and by incorporating all of the best features of the various institutions visited, they have evolved a building pronounced by visiting surgeons of eminence to be the most complete and convenient institution of its kind in this section.

This sanatorium was constructed with the sole purpose of building a thoroughly modern hospital for surgical, gynecological and medical patients. It is equipped with every modern appliance for such an institution. Constructed of red brick, with stone trimmings, it possesses an exterior very pleasing to the most critical eye, and an interior arrangement which a study of the accompanying plans will show to be unsurpassed for convenience and service.

The visitor on entering is ushered into a reception hall, to the immediate left of which are the general and private offices of the institution. Upon the right is an alcove reception room and leading therefrom the public parlor. Immediately off main halls on the one side are the supplies, drug and head nurse's room, while on the other side is the elevator and stairs, also the electro-therapeutic and x-ray rooms, connected by the dark room, with laboratory in the rear of the x-ray room.

In the rear of the administration portion of the building are the general wards, both male and female, and four individual rooms on each side of the hall, while the broad glass-enclosed solarium, overlooking the Ashley River, extends the full width of the building.

Fig. 1. Baker Sanatorium, Charleston, S. C.

The second floor and a portion of the third are devoted entirely to private rooms. Some of these are luxuriously appointed suites, consisting of bedroom, bathroom and private sun parlor. All rooms are "outside rooms," hence well lighted and cool. The furnishings of these rooms are not only pleasing to the sight, but what is more important, fashioned after such a design as to be in keeping with the latest sanitary principles. The beds are either white or of brass, and the furniture is of mahogany or circassian walnut, producing a beautiful effect.

In addition to a very complete obstetrical room, equipped with the best appliances and instruments, there are two operating rooms. They are

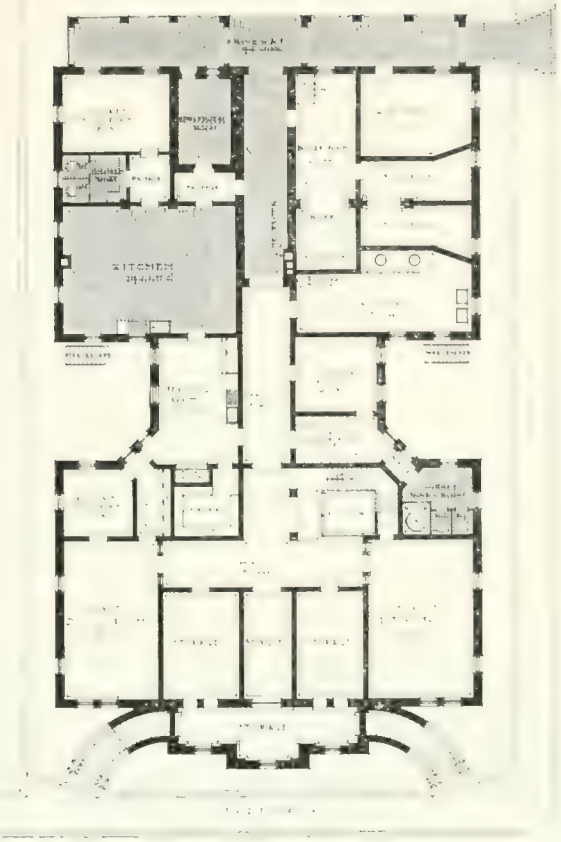


Fig. 2. Baker Sanatorium, Charleston, S. C. Basement plan.

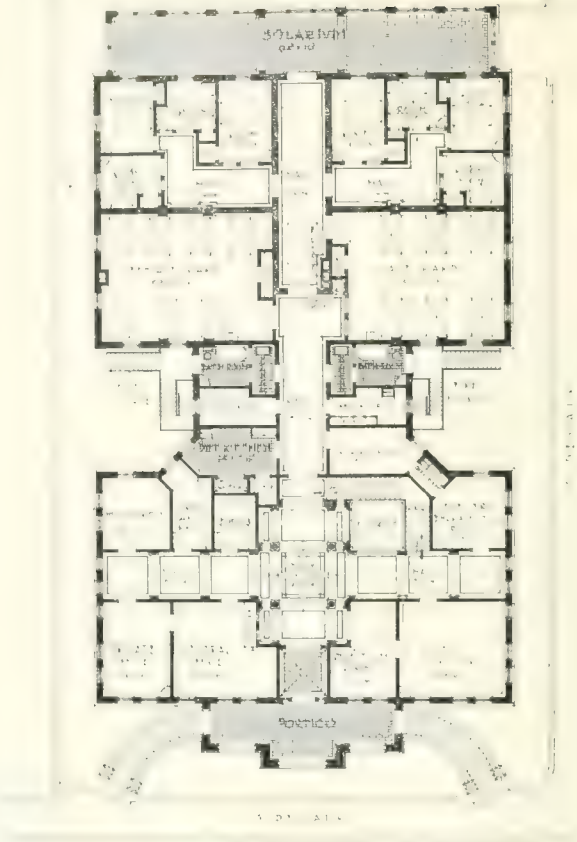


Fig. 3. Baker Sanatorium, Charleston, S. C. First floor plan.

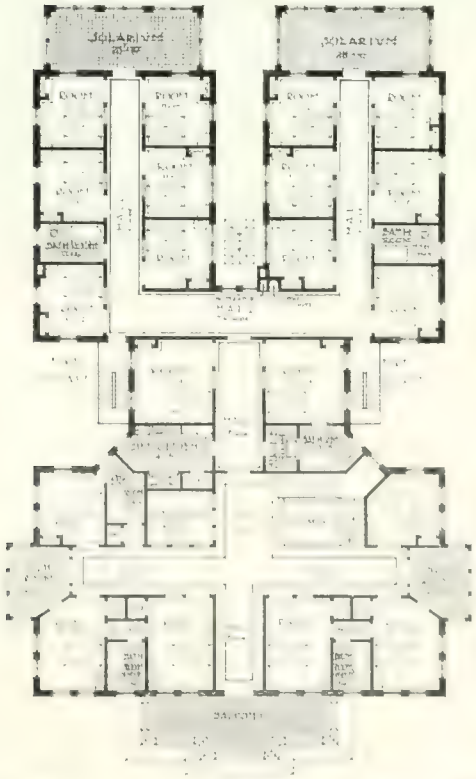


Fig. 4. Baker Sanatorium, Charleston, S. C. Second floor plan.

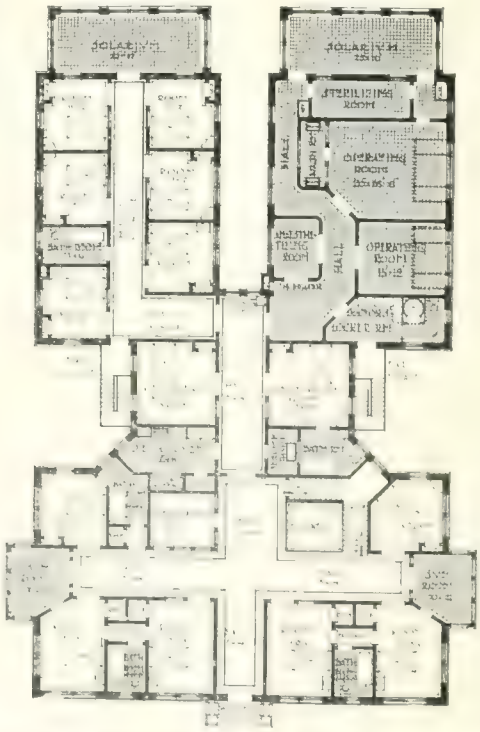


Fig. 5. Baker Sanatorium, Charleston, S. C. Third floor plan.

on the third floor, on the north side, thoroughly isolated from the rest of the building and admirably lighted both by sunlight, gas and electricity. The operating tables are of two designs, the best and most modern used in science and surgery. Every detail in these rooms, no matter how small, has been worked out with the greatest of care. Adjoining these operating rooms and most convenient to them is the anesthetizing room, which is in the hands of an expert anesthetist, whose entire time is devoted to the work. The wash-up room is separated from the major operating room by a plate glass partition, thus doing away with any commotion in the operating room, and yet the patient is always under the eye of the surgeon. The sterilizing room, recovery room and pathological laboratories for the quick examination of specimens are all conveniently grouped around the operating rooms.

Patients can enter the sanatorium through an ambulance driveway in the basement, which leads directly to the elevator.

The main kitchen and serving pantry are located in the basement, completely isolated, yet connected by dumbwaiter with the various diet kitchens on each floor above. Adjacent to the kitchen are the dining rooms for the doctors, nurses and help, also a modernly equipped refrigerator room, with the balance of basement arranged for the housekeeper's room, nurses' lecture, locker and wash-up rooms, store rooms, morgue and mechanical department.

The sanitation of this institution is perfect. There are no base boards or square edge trim to collect the dust and germs; the windows are provided with deflecting boards, thus admitting the breeze, yet precluding the possibility of injurious drafts.

The entire building is lighted by electricity and gas, heated by a hot water system, provided with intra-phone system connecting every part of the building, besides the local and long-distance telephones. On each floor are private consultation rooms for the visiting physicians.

In connection with the sanatorium is a training school for twenty-five nurses, whose home is just across the courtyard from the main building. This cottage was constructed with special reference to the comfort and convenience of the occupants, and homelike and comfortable.

THE TRAINING OF SUPERINTENDENTS OF SMALL HOSPITALS

Pre-nursing Education Most Important—Broad Nurse Training of Course Essential—Survey of the New Job Mastering the Details—Assistance—Rising to Emergencies

By ETHEL J. JOHNS,
LATE SUPERINTENDENT M'KELLAR HOSPITAL, FORT WILLIAM, ONTARIO

In considering the question of the special preparation of a woman intending to take charge of a hospital of one hundred beds, it is presupposed that she has received a fairly good preliminary general education. If to this be added one or more years of collegiate work she will be the better equipped for her task. Her professional training should, preferably, have been received in a large hospital, but it is most desirable that she should also have had a period of service as assistant in a smaller institution. Lacking this experience, it is frequently difficult for her to grasp the changed conditions with which she will be confronted.

Before proceeding to suggest specific methods of preparation, it will be necessary first to indicate the broader aspects of the situation which it would be well for her to study as her first step in preparation. Unfortunately, this step is seldom taken—only the narrow professional phase of the matter is considered and the broad and comprehensive view is frequently never striven for.

It would be well for her to study the community in which she intends to do her work from the following points of view:

(a) *The social aspect.* Under this head would come the kind of community, whether industrial or rural; the type of patients likely to present themselves; the various public health activities and their relation to the hospitals; the presence or absence of various organizations likely to be of assistance to the institution.

(b) *The educational aspect.* From this she would gain some knowledge of the sort of pupils likely to be available for her training school, and of the kinds of schools or collegiate institutions in the community, with a view to possible cooperation with them in the solution of the educational difficulties with which she will be forced to contend.

(c) *The medical aspect.* This would include a survey of the kind of professional work being done by the local physicians, their attitude towards the hospital, the nature of their medical school or society, and their standing in the community generally.

(d) *The financial aspect.* She should inform herself of the sources of income of the hospital, and of the nature of her responsibility in this important field.

Having made a general survey of the whole field, she may then study in detail the problems she will be called upon to meet and to solve. A brief outline only can be given, and an attempt will first be made to present those which rightfully belong to her, leaving those which have been unjustly thrust upon her for later consideration. As efficient administration depends on proper organization, it will be essential for her to comprehend from the beginning the nature and activities of the governing body, whether this be a municipal commission, board of directors, or private corporation. The relation of this body to the community at large, to the hospital, and to herself should be given careful study.

It will be necessary for her to formulate a well reasoned out plan for internal administration, with due regard to the conflicting claims of the various departments, and a clear vision of their mutual interdependence. The training school will naturally be her first thought. Not only should she be able to arrange her force in the wards in such a manner that the efficient nursing care of the patients may be best assured, but she must also bear in mind the fact that the interests of the individual nurse must not be sacrificed to the convenience of the institution by keeping her too long in one service. The possible range of experience in a small hospital is restricted at best, and every possible use must be made of every phase. The superintendent's task as regards the teaching of the so-called theoretical subjects consists in the arrangement of a suitable curriculum with due regard for balance, relevancy, and sequence. Having secured this, she should strive to obtain such teaching assistance as can be afforded, bearing in mind the previously mentioned possibilities of co-operation with local teaching institutions. It is desirable that she, herself, should be cognizant of the principles of good teaching, and be able to give practical demonstration of such knowledge by the manner in which she conducts the teaching of such subjects as it may be necessary for her to assume herself. It will probably devolve upon her to supervise and direct the social activities of the residence, and it need hardly be emphasized that a tactful woman may exert a most beneficent influence.

The housekeeping department will probably be under her direct control. She should familiarize herself with the workings of every branch of it, although she should insist on adequate assistance in this most important phase of hospital activity.

In the matter of finance, although she may not be expected to assume full responsibility, it will be necessary for her to be conversant with approved methods of hospital accounting, and to have a fair knowledge of office methods. The buying of supplies will probably devolve upon her, and a close study of the various methods of buying—by contract, in the open market, etc.—will be of great assistance to her in performing this important function intelligently.

So much, then, for some of the problems to be met. It remains to be seen what means may be taken to prepare for their solution.

The following suggestions might be made regarding a preparation which might in part be conducted in any good training school.

First, a thorough study of the organization of the parent institution in the broader sense, with a comparison of it with similar institutions in the community. An investigation of the housekeeping problem at first hand, with, if possible, a short period of service in every department, including the laundry, would be of the greatest practical value, and, in addition, some experience in the principles of institutional buying, as shown in the steward's department, should be obtained. It is unfortunately true that the large training schools do not, as a rule, afford the student as good an opportunity for advanced study as they might.

It is possible also to secure university training, which is invaluable to a woman expecting to occupy the type of position under consideration. If for any reason such training is not available, many agricultural colleges and collegiate institutions throughout the country offer excellent short courses in such subjects as household economics, which supplement admirably the deficiencies of the average hospital training. Quite apart from their practical value, any such courses would be desirable in that they tend to bring the intending superintendent in touch with educational activities in other fields than nursing.

Various special duties have been demanded from the superintendent of very small hospitals, simply because it is apparently difficult to find persons in small communities capable of assuming them. The justice of such demands is questionable, but the fact remains that she may be, and often is, expected to assume the role of pharmacist, anesthetist, or even x-ray operator.

It would, of course, be possible for her to obtain the necessary experience in any one of these subjects, and in a sense it might be well for her to possess such training. The power to rise to any emergency is an important weapon in her arsenal, the possession of which may mean the difference between success and failure.

THE MOST FAMOUS HOSPITAL IN THE WORLD—OLD BEDLAM

Founded More Than Six Centuries Ago, It Is Now Abreast of Modern Medical Science—It Has Led the Way in Many Reforms—Famous Characters in History Have Been Identified With It—Henry VIII Stole It—George III Was Confined in It—Hogarth Illustrated Its Horrors

IT is contradictory that while we are accustomed to view an American hospital built and equipped ten years ago as no longer modern, in the commonly accepted definition of the term, one of the great hospitals of the world, living and flourishing and performing a herculean service to the sick today, is one of the most forceful connecting links between our own time and the gray dawn of medievalism.

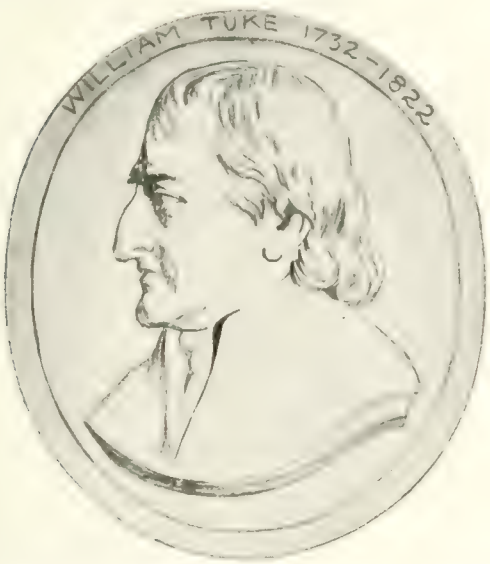


Fig. 1. William Tuke. The Quaker Friend of Bedlam who led the way to a revolution in the care of the insane.

A decade serves to paint the walls of our own cherished hospitals with the rime and weathering and wear of time; what shall we say of six centuries as the life span of a hospital? Such is the life story written in the walls of Bethlehem—Old Bedlam, that stands in the heart of London, as vigorous and valiant and militant as though only yesterday the boasted "efficiency" of twentieth century civilization had lavished its offerings in its creation.

"To all archbishops and bishops, abbots and priors, and to all the faithful children of God! Be it known, that the Brothers of Bethlehem represent a monastery which offers shelter to the poor, the stranger and the pilgrim, and affords succor to all Christians in affliction. If peradventure the Brethren shall come unto a castle, or village, which has been lying under an interdict, the churches shall be opened and Divine services celebrated there one day in the year at the glad sound of their coming!

"It is our will and pleasure that you permit the Brothers to address the people in your churches, and to ask alms of them without let or hindrance. Furthermore, we, relying upon the authority of Almighty God and of the blessed apostles, St. Peter and St. Paul, do relax forty days of any penance, enjoined in the case of anyone, who shall succor the Brothers out of the wealth which God has given him, and shall enroll himself in so holy a fraternity, contributing annually to their funds."

The above encyclical, given under the Papal seal, on February 3, 1245, by Pope Innocent IV

Fig. 2. James Norris, an American, whose confinement and punishment created a furore in London, and revolutionized the care of the insane. From an old etching.

to Godfrey de Vico, Bishop-elect of Bethlehem, was destined to found an institution known to the whole civilized world as "Bedlam."

In the year 330 A. D., or thereabouts, Constantin, inspired by the faith of his mother, Helena, built a magnificent temple or basilica about the cave of the Nativity in Bethlehem and the Brothers of Bethlehem became its custodians. This was the second of the Christian orders to be created. St. John the Lesser was its founder.

The changing fortunes of the Crusaders rose and fell for centuries under the sacred edifice, and many Christian soldiers laid down their lives at its doors in their efforts to worship at its shrine. Baldwin was crowned the first Latin king of Jerusalem in the temple in 1101; Saladin, Khalif Omar, the Saracens and Tartars, took it and lost it; it was drenched with blood for nine centuries—and yet it stands today almost as Constantin left it, though Justinian brought painters and sculptors

Fig. Trading on insanity. Tom o' Bedlam, a beggar, who pretends that he has been in Bethlehem Hospital. In this character he made a good deal of hay while the sun shone for him, in the sixteenth and seventeenth centuries.

and mosaists to ply their arts in its further beautification. When the war clouds disappeared the Christian Brothers of the Order of St. Francis found the temple abandoned and these proceeded to occupy it. Many hospices of the Order were founded in Italy and France. What wonder was it, therefore, with the Pope's Encyclical in their hands, the followers of the kindly and gentle St. Francis were made welcome in England! One of the first friends they found was Simon FitzMary, a stalwart and militant sheriff of London town, who gave them land and aided all their enterprises in the founding of Bethlehem Hospital.

On the 13th day of October, 1247, Henry III, on the Feast of the Translation of Edward the Confessor, passed with a procession from St. Paul's to Westminster Abbey, carrying under a canopy a phial of the blood of Christ, sent by the Templars. He was accompanied by Godfrey, Bishop of Bethlehem, and when they were arrived at St. Botolph's, Bishopsgate, incense arose about and holy water fell upon the land given by Simon FitzMary, the sheriff. An oratory was erected; a holy relic hallowed it, it was anointed with holy oils and censed with a cross of smoke, and prayer and antiphon and holy water consecrated it to the service of the Son of Mary. Today the land which Simon offered on his knees at the altar, "to the Church of the glorious Virgin Mary of Bethlehem," is situated about Liverpool street and its three great railway stations. It was a place of marshes and moors and gardens. Conditions have changed, Bethlehem was robbed and cheated by kings and courtiers. The last of the masses for Simon's soul was sung many centuries ago, and even his name is forgotten except by the antiquarian, but Bethlehem still flourishes and as Simon would surely wish it, it ministers to the sick and the afflicted.

There have been three buildings of Bedlam, the first as just related, which was more a monastery than a hospital, the second building completed in 1676, a real hospital, "very magnificent," as Evelyn, a connoisseur, called it, which excited the admiration of contemporary culture and the unstinted praise of foreign visitors. This was built on the city moat at the edge of Moorfield. The third structure, illustrated on the front page of this issue, was begun about 1812. The present dome was built in 1844-46.

Year after year changes have been made in the architecture of the historic pile, new additions have been made, new wings built, old ones changed, without doubt each change registering a step of progress in the science of medicine.

During all these six hundred years of the existence of Old Bedlam it has been the plaything of political mountebanks, quacks and crooks of every conceivable character. Henry the VIII stole the institution from those to whom it had been entrusted and made of it a political bailiwick for the benefit of his courtiers and favorites. One of the earliest whom he placed in charge of the institution was Geo. Boleyn, brother of one of his wives, Anne. George was executed in the Tower, not on account of misdemeanors at Bedlam, but that might well have been.

After long years the city of London got control of Bedlam under contract with the king, and it was in better hands.

How many historic figures played their part in life about the old priory! Cowley, the poet, returned from a visit there, "not only melancholy, but sick with the sight. To weigh the matter

Fig. 4. Delusional insanity. He wanders along the road, driven by forces invisible, yet irresistible. The powers of darkness (moon, bat and toad) seem leagued in hostility against him, and man "whips poor Tom from tithing to tithing."

justly, the total deprivation of reason is less deplorable," he found, "than the total deprivation of it in the thousands I meet abroad." Cromwell's porter, Daniel Curtis, was an inmate there and founded some wise philosophies during his moments of contemplation which he rehearsed to his famous master.

Dean Swift one day "set out at ten o'clock to the Tower and saw the lions; then to Bedlam; then dined at the chop house behind the Exchange and concluded the night at the Puppet Show."

One who was supposed to be an inmate wrote a story called "Bedlam Broke Loose," in which was described a pandemonium within the building one day when Lord Gerard and his mother visited there.

Dickens's conception of Sairey Gamp and Betsy Prig was formed from what he learned of the attendants at Bedlam.

Hogarth's rake finished his career in convulsions there. Shakespeare found many of his scenes there. Dean Swift was a governor at one time, and his principal act of governorship seems to have been an order to confine there Beaumont, the playwright. In the time of James the First, old Percy's guests "paid ten shillings to see the show at Bedlam." Jack Sheppard's mother was a patient there.

John Wesley was refused permission to visit Bedlam; he went to visit a young woman, and says of his experience, "I had not talked to her long before someone gave me to know that none of the preachers were to come here. So we are forbidden to go to Newgate for fear of making them wicked, and to Bedlam for fear of making them mad." Sairey Gamp told poor old Chuffey how the nursing was done in Bedlam. "You want," said Sairey, "a pitcher of cold water thrown over you to bring you round; and if you say so, Betsy Prig, who

Fig. 5. Jack Sheppard visits his mother in Old Bedlam.

has nussed a 'many lunacies, and while she knows their ways, you would have it, too. Spanish flies is the only thing to draw the nonsense out of you, and if anybody wanted to do you a kindness they would clap a blister of 'em on y'r 'ead and put a mustard poultige on y'r back."

But there were many reforms that came out of Bedlam. Dr. Edw. Tyson instituted many reforms in the care of the insane on the halls of Bedlam. It was he who first suggested that a diseased mind

Fig. 6. The insanity of George III.

might have been preceded by a diseased body. He found also that many cases had to be "fed up on flesh-forming foods and given hot and cold baths." Medicines, proper to physical disease, were administered under the superintendence of a nurse—the first real nurse installed at Bedlam.

Perhaps the most eminent patient that Bedlam ever had was George III, who groped his way in blindness about its halls for years after having lost the American colonies, and who was removed from the famous hospital only to be allowed to die in Windsor Castle.

Strange as it may seem, the brightest day in Bedlam's history was connected with an American patient who was confined there, James Norris. Norris was in chains with an iron collar welded about his neck and fastened to a post; his body was chained to the floor and rivets and heavy chains made it impossible for him to more than move. While Norris was there in the spring of 1792, William Tuke, a tea merchant of York, suggested to the Society of Friends, of which he was a member, that insanity had hitherto been treated by "irritating forms of compulsion which tended to exacerbate the disease." He persuaded the Friends, therefore, to try the experiment of treating the irrational "as if they were rational patients and to dispense, as far as possible, with irritating forms of coercion."

It was a year later that Phillippe Pinel, the great Paris surgeon, struck the chains from off the bodies of the patients of Salpetriere; but Tuke, of Bedlam, got no credit for that great reform.

The confinement of James Norris created a remarkable excitement in London, perhaps because he was more tightly and rigidly and harshly chained than other patients had been, or perhaps because the beneficent Tuke happened to see him and to bring his case before the public.

The horrors of Bedlam have been perhaps the greatest horrors the world has ever known. Its history has been woven into the history of civilization in a way that perhaps has not happened to any other structure in the world; and from out its hallowed walls have come some of the greatest reforms in the care of sick.

All this wonderful story of Bedlam, and many, very many, interesting incidents not recorded here, are told by Dr. Edward Geoffrey O'Donoghue, chaplain to the hospital, in a book recently issued, called "The Story of Bethlehem Hospital from its Foundation in 1247." Dr. O'Donoghue has done a wonderful service in bringing together such a mass of interesting historical data.

Fig. 7. A corner of Bedlam today.

Tonsil and Adenoid Operations at Children's Clinics of New York Department of Health

EXAMINATIONS AND SAFEGUARDS

1. The child is examined by a physician to note the presence of abnormalities that demand operative procedure.

2. A complete physical examination is made to make sure that the patient is a safe subject for operation.

3. The parent or guardian is interrogated as to the presence of contagious disease in the child's family.

4. A history card is made out for each child. On this are recorded clinical notes describing the conduct and condition of the child (whether lively, cheerful or reverse), condition of nutrition, appetite, intestinal functions, presence of pulmonary signs, pulse, respiratory rate and temperature, and whether the child sleeps well. A specimen of urine is collected and examined before the child is operated upon. The record shows the specific gravity, the reaction and the presence or absence of albumen as detected by the heat and acetic acid test.

5. A child is not received for operation who shows a condition of seriously lowered vitality or has any organic disease. These children are referred to a physician for treatment and are requested to return later.

6. Upon admission to the clinic, the children are undressed and bathed and put in hospital garb. Younger children are bathed by the nurse, older ones under the direct supervision of the nurse.

7. The nasal fossæ are irrigated the night of admission and again on the morning of the operation. One quart of warm normal salt solution is used for these nasal irrigations and the soft rubber hose of the douche bag is inserted into the nostrils.

8. The day preceding the operation the children are kept quiet; are made to retire at 7 p. m. in winter months and 8 p. m. in summer months; are instructed how to inhale gas, and are admonished to be brave in the operating room for the sake of the benefits that will accrue from the operation.

9. The day of the operation the children are held in the playroom, and so far as possible their minds are diverted from the operation. About six a. m. they receive a bowl of cereal and a glass of milk. The history cards are written up, stating how they passed the night, condition of appetite and other functions. The morning temperature is taken by rectum. If this is found to be 99.5° F. or over, with a pulse of 120 or over, a special record of the fact is made in red ink. Such children are not operated upon that day.

10. The nurse makes a special inspection of the exposed skin surface and notes on the history card the conditions found, viz., whether clear or otherwise.

11. The operating room nurse accompanies the child from the playroom to the operating room, sterilizes the instruments and sees that all paraphernalia used at the operation is clean and sterile.

12. After operation the orderly carries the child to the bed, and the ward nurse takes charge, and stays with the child until the active bleeding stops. She takes the pulse rate and respiration rate and watches for swallowing symtoms. A pulse rate of 100 to 120, of poor character, thin, irregular, with the swallowing and suggestive signs of progressive weakness and air hunger, demands the presence of the operating surgeon at once.

13. The operating surgeon and anesthetist are available for four hours after the last child has been operated on. They must remain on duty after the operation and remain in the clinic until each child may be said to be out of danger. Emergencies occurring after a four-hour interval may be referred to the anesthetist or any other inspector on duty. The assistant director is notified at any hour of cases of serious bleeding.

14. The registrar is required to report in writing any instance where the operating surgeon or anesthetist fails or is negligent in his duty.

15. The child is kept in bed from 10 or 10:30 a. m., the time of day the operation is performed, until 7 a. m. the following morning.

16. Bedside notes and the condition of the child when discharged are recorded in full.

SOCIAL SCIENCE CONGRESS FOR CHICAGO

Central States Division Holds First Meeting to Take Stock and Plan Work in Several Fields

The first Central States Conference on Social Hygiene will convene in Chicago, October 25th and 26th of this year. The sessions of the Conference will be held in the Florentine Room of the Congress Hotel at the corner of Michigan avenue and Congress street. The first session of the Conference will be held in the evening of October 25th, and will be given over to discussions of general features of the social hygiene movement. In the forenoon of the following day the moral and educational features of the social hygiene movement will be taken up; in the afternoon the medical and public health aspects will be treated; the evening session will be given over to discussions of the legal and administrative phases.

The field to be covered may be indicated by the following partial list of subjects:

The Correlation of the Social Hygiene Movement with Other Public Health Movements.
"Eugenic Laws," so called.
The Moral Value of the Modern Hospital.
Reporting of Venereal Diseases.
Public Venereal Clinics.
Prostitution and the War.
The Economic Loss Due to Prostitution.
The Administration of the White Slave Traffic Act by the Federal Government.
The Success of the Injunction and Abatement Law.
The Education of Public Opinion in Regard to Social Hygiene.
The Present Status of Education with Reference to Sex.
The Newspaper as a Moral Educator.
The Progress of the Social Hygiene Movement in the United States.

An announcement just issued states the purpose of the Conference as follows:

It is not the object of the American Social Hygiene Association to make the Conference a large gathering, although the public is cordially invited to the meetings. It is the object of the Conference to provide an opportunity for persons interested in education with reference to sex, the control of venereal diseases, the suppression of prostitution, and in the upbuilding of public morality and health, to discuss with the leaders in these various phases of the social hygiene movement, such problems as may be pressing upon their respective communities. There will be a general "taking of stock," an estimation of our progress, and a survey of the ultimate meaning of events and ideas in the field of social hygiene. There will be opportunity for the expression of opinion and for the relation of experiences bearing upon the subjects under consideration.

All persons interested in any phase whatever of the social hygiene movement are invited and urged to attend the Conference. The field secretary of the Central States Division is glad to give information regarding the Conference. Address 1949 People's Gas Building, Chicago, Ill.

A bureau recently established by the U. S. Public Health Service is investigating the relation of workers' fatigue to temperature and humidity in the mills of Pittsburgh.

The MODERN HOSPITAL

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Contributors, subscribers, and readers will find important information on advertising page 34.

Hysteria and the Public Welfare

Some five or ten years ago a small epidemic of foot and mouth disease broke out in the cattle in New Jersey or territory adjacent thereto. The papers published small brevities about it. A few well-informed men warned the country of its dangers, not only to live stock but to the human family.

Nothing was done about it, of course; the warnings went by as the idle wind and as little heeded.

All of a sudden, a year or more ago, the disease broke out with violence and virulence while the Chicago Stock Show was going on, and while there was assembled at the stock yards in that city the greatest aggregation of valuable live stock that had ever been brought together. Then the government veterinarians and sanitarians grew wildly hysterical and they have been going about the country destroying stock valued at millions of dollars, without the least compunction and evidently without the slightest knowledge of whether it was necessary to destroy this stock or not.

Recently the writer of this editorial visited one of the finest stock farms in the United States and found there fifty head, more or less, of fine cattle that had just been released from quarantine in the Chicago Stock Yards. None of this herd had died from the foot and mouth disease, although a few of the calves had died from pneumonia incident to the bad conditions in quarantine. Some of the cows, many of them worth thousands of dollars each, had given birth to calves while in quarantine. Only a few of the herd ever had any symptoms of disease and all of them are now apparently perfectly well; and yet thousands of just such cattle as these have been indiscriminately slaughtered during the past year by government agencies.

A few days ago there were symptoms of the foot and mouth disease in a few of the famous Guernsey herd of Mrs. Scott Durand, of Lake Forest, Ill., and it was decided by the government agencies that the whole herd must be immediately slaughtered, and four or five officers appeared at the farm one morning at daylight to carry out this determination. Fortunately, Mrs. Durand had not become affected with the same hysteria that had taken hold upon the government veterinarians and she took the wise precaution to obtain a court injunction to prevent the destruction of her herd, and the matter now rests as a court proceeding.

This live stock panic and full-fledged hysteria on the part of government agents would not concern us but for the fact that it is only part of what has apparently become a national trait in this country, viz., to procrastinate in the face of the plainest kind of warnings concerning calamities of one sort or another, and then grow wildly hysterical when the time has come to act deliberately to prevent a catastrophe. This general attiture of the public toward its vital problems is all so vastly different from the attitude toward these same problems by one section of the Public Health Service that attention ought to be called to it.

The bubonic plague is a terrible thing, and yet when it broke out with violence at New Orleans eighteen months ago there was not the slightest disturbance anywhere; no hysteria, no panic, no interruption of business and no interference with the rights, privileges and duties of the public. The Public Health Service of the government got on the ground immediately and began work in a quiet, systematic and orderly fashion, and has maintained that work up to the present time and has wiped out the plague and every semblance of it. During that time almost the whole city of New Orleans has been rat-proofed, disinfected and cleaned up. It has been made impossible for rats to enter the city by means of the shipping and more than half a million rats have been caught, killed and microscopically analyzed; hundreds have been found infected with the bubonic microorganism, but for nearly one year, now, not a single human patient has been infected.

A few days ago a woman died in Chicago and it was said she had all the symptoms of the foot

and mouth disease, and yet some small accident interfered with the making of an autopsy, so that the woman was buried without its being known whether or not she had a disease that might be the beginning of a very bad epidemic—and not the slightest excitement was created by the occurrence and apparently no serious effort was made by anybody to ascertain the facts in the case. Now if there happen to be two or three more cases, or half a dozen, suffering from the same symptoms from which this woman died we may expect the community to be panic-stricken and there will come a demand for the expenditure of unheard of sums of money, and the activities of numerous agencies, whereas, if just a small amount of common sense were employed in the first instance and the proper things done, the matter could be well in hand as routine practice in public health work.

Buying Cheap Things for Hospitals

Every hospital is doing what it can to keep its running expenses down to the lowest possible point consistent with good service, and this policy seems to be all the more necessary in these days of high prices and more or less uncertain income from subscriptions. There comes a point in the effort at economy, however, where low price must be at the expense of the future, and where low price ceases to minister to economy.

The writer knows one hospital that was built five or six years ago, in the planning of which the board of trustees, headed by a successful merchant, took the ground that hospital buildings were costing entirely too much, and they purposed to show that a splendid hospital could be built at a cost of less than 20 cents per cubic foot —the cost, by the way, of a good factory building that the head of the board had just recently completed.

A good deal of ornamentation was put on the front of the building, and the "show places" were accentuated in the architecture, but cheap iron piping was used in the plumbing and steam fitting; cheap fixtures were used; cheap paints were put on the walls, over cheap plaster; the veneer doors looked fine, but the cost was exceptionally low. The hospital was completed at a remarkably low price, and the board of trustees were lauded to the skies and held up as examples of what a disinterested group of successful business men could do by cutting out graft and using business judgment.

Before two years were past the hospital looked fifteen years old, and repairs, alterations and renewals were monthly features in the balance sheet. Today the plumbing has become all but useless; the veneer is bulged and split on nearly every door; the floors are a disgrace, and, of course, the paint all over the house was gone long ago and replaced by the same board with equally cheap stuff, which, in its turn has been washed and worn off.

If that board of "business men" had put in good material in the first place, their hospital would have run along practically without repairs or renewals for several years, and for ten or fifteen years the upkeep should have been negligible.

Then in regard to medical and surgical supplies and foods: poor instruments, badly made; cheap syringes, water bottles and rubber goods; shopworn, vulcanized rubber gloves; large mesh, light weight gauze; short fiber cotton poorly absorbent; there is enough waste on all these commodities to more than pay for good materials—to say nothing about the inconveniences due to accidents in the use of poor stuff.

There can be no question about the desirability of using the best of foodstuffs. Without considering the necessity of providing sick people with wholesome foods and nurses and interns with attractive, appetizing dishes for their health's sake, the question of economy alone would settle the question in favor of quality. There is enough waste on poor food supplies that must be thrown away to more than pay for good stuff.

So, taking the whole problem, and from any viewpoint, there is no money to be made buying cheap products, and everything to be gained by buying the best of its kind.

Women on Hospital Staffs.

The recent statement by a member of the faculty of Harvard Medical School that "women are not temperamentally and physically adapted for general practice and research work" seems to have occasioned a good deal of excitement in medical circles, and the returns up to date show that there is almost a unanimous sentiment against the Harvard professor's conclusions.

The New York *Sun* and other lay publications are calling upon hospital trustees, and especially on hospital auxiliary boards of women, to increase the number of medical women on their scientific staffs and thus begin to show that women *are* temperamentally and otherwise qualified to serve as clinicians. Some women doctors, in commenting on the Harvard professor's statements, have told about the difficulties they find in being received not only on hospital staffs but in postgraduate schools and other places where clinical experience was to be had.

We are not attempting to speak on the general proposition of the qualifications of medical women and we have no desire to enter the controversy, but there is one phase of this topic that seems to have been suggested by the New York *Sun* and upon which we might say a word or two.

There are a few hospitals in this country whose staffs are made up entirely of women, mostly maternity and children's hospitals, and there are a few general hospitals that have a small sprinkling of women among the staff members.

There are, no doubt, many women of just as broad views and well-founded training as men, and who can hold their own with men wherever they are placed, but it may be said without fear of successful contradiction that hospital staffs made up exclusively of women have not usually been happy in their careers. One of these institutions just now in mind and in which there is a strong, well-balanced woman superintendent, has been in turmoil and discord for years, and occasionally methods that savor much of the political mass meeting have characterized their staff conferences. It is said that in this particular hospital the women are jealous of each other in little things, that they meddle with the hospital administration as to details, and that they keep things generally in a ferment.

It is notorious that women superintendents of hospitals look with grave concern upon the advent of a woman member of the staff; and if women have been kept off of medical staffs of hospitals in this country, it has not been due to disinclination on the part of men trustees or men staff members to give the women a chance, but it has been due far more often than otherwise to open or insidious protests from the women superintendents.

We agree that women ought to have broader opportunity in our hospitals, and that they ought to be encouraged to enter clinical work, where their finer sensibilities and even their intuition, could mean so much to the sick; but these women have something to do also, to make their presence welcome; they must not interfere with hospital administration. They have nothing to do with the kitchen or the linens, or the dish washing, or the floor scrubbing, or the house furnishing; that is the privilege and duty of the superintendent; she is paid for it and cannot divide her responsibility with staff members, whether they be men or women.

Moreover, it seems to us, and we make the suggestion in all kindness and sincerity, that if medical women would cease to regard themselves as always on the defensive, and if they would cease to go about looking for trouble in hospitals and apparently looking for someone to insult or be discourteous to them, and would settle themselves down to the plain work of practicing medicine, taking care of their patients, performing the services that are theirs by right of their profession, and spend their time in the investigations and researches that would give them a better insight into the clinical side of their profession, they would make more progress in clinical medicine, and certainly more of them would be welcomed on hospital staffs.

Hospital Construction Suspended by the War

There are perhaps one thousand new hospitals projected or planned, or for which contracts have been let, at the present time. Nearly all activities in this field have been suspended owing to the war in Europe. Funds have been held up; those who are usually able and willing to give toward hospital construction are declining to do so at the present moment because of financial uncertainties due to the war.

Is it supposed for a moment that because a few million human beings across the world have gone mad and are destroying each other that the peace plans, health preservation and the routine rules of living must all come to an end?

This country was never more prosperous than it is today; the future never looked brighter, and political disturbances and war clouds will come and go, but the permanent well-being of our people depends on good care for the sick and the proper coordination of health activities for the well.

We can easily work ourselves up to a mental attitude where the direst calamities are just around the corner—but we can also practice a little sanity, keep our feet on the ground and go about our way doing the every-day things of life, as it is our duty to do, and we are more likely in that way to keep free from the turmoil and strife over the seas.

So let us get our money together, complete our plans, go on with our construction, equip our new hospitals and prepare to take care of the vast millions of people who must still receive incompetent care and be deprived of many of the auxiliaries in diagnosis and treatment of disease which are now at the hand of medical science. Let us sober up and get down to business in our hospital activities—and all will be well.

The fees received for making out certificates for the state industrial commission patients in the Cleveland City Hospital will, in the future, be devoted to the establishment of a medical library in that institution.

HOSPITAL, MEDICAL *and* SPECIAL MEETINGS

Organization of the Ohio Hospital Association

BY GEO. V. SHERIDAN,

Of the Ohio State Medical Journal, Special Correspondent of THE MODERN HOSPITAL.

Problems of hospital management, comparatively new to the hospitals of Ohio, inspired the formation at Cedar Point on August 25 of the Ohio Hospital Association.

Responding to an informal call issued by Dr. E. R. Crew, Miami Valley Hospital, Dayton, representative executives of about forty Ohio hospitals assembled at the Point on August 25, and after a lively two days' session completed an organization which promises to become of considerable value to the hospitals of this state in meeting some of the newer problems of hospital administration.

Probably the most important subject under discussion was the pending registration of nurses and its consequent effect upon the hospitals of the state, through the necessary establishment of uniform standards for nurses' training schools. Discussion of the many intricate points involved in this question consumed a large portion of the time. Dr. George H. Matson, secretary of the state medical board, which is charged with the enforcement of the registration law, and members of the nurses' state examining committee, were present and participated in the discussion. A resolution was adopted declaring it to be the sense of the new organization that the new law is in the interest of both the public and private hospitals of Ohio, and requesting that the board exercise diligence in seeing that the interests of the small as well as the large hospitals be carefully considered. The resolution further pledged the association to help the various hospitals so to organize their training schools as to enable them to comply at least with the minimum requirements to be established.

The Association pledged its hearty cooperation to the state medical board in effectively working out a plan which will increase the efficiency of their nursing service.

Hospital problems arising from the administration of the workmen's compensation act were also discussed at the meeting. One of the functions of the new organization is to promote better cooperation between the medical department of the commission administering this act and the hospitals of the state. While in the main the hospital executives reported that workmen's compensation has been an improvement over the former system of caring for industrial accidents, they reported several abuses of the system that have developed. A free discussion of these on the floor of the convention indicated that the hospitals generally would materially profit by systematic exchange of facts and cooperative effort. For instance, it developed that some hospitals were being paid a $5.00 fee for use of the operating room, while others were not aware that such a fee is allowed, and had not been collecting it. Also, various plans were discussed of meeting the arbitrary ruling of the commission which established a fee of $15.00 per week as the maximum allowed for hospital services in all cases. This in many instances is a serious problem, as the commission does not allow for extra service rendered and its low maximum makes it impossible, in many cases, to show a profit or even to pay expenses.

The executives were unanimous in condemning the $200.00 limit for complete medical attention, which was written into the law. Numerous cases were reported—usually broken backs—where the $200.00 fee did not cover even the nurse's fee, and worked a consequent injustice upon the surgeon and the hospital. This Association will join with the state medical society, and with all organizations which have any intelligent idea of this law, in requesting the next legislature to modify this limit.

The rather confusing rulings of the United States Internal Revenue Department, under the new Harrison anti-narcotic law, was another general topic discussed at this meeting. Dr. John A. Hornsby, of Chicago, noted hospital consultant and editor of THE MODERN HOSPITAL, who was the chief guest of the conference, threw an interesting light upon this subject. He had conferred personally with

DR. E. R. CREW,

PRESIDENT OHIO HOSPITAL ASSOCIATION.
Superintendent Miami Valley Hospital, Dayton.

the chief of the department and had been informed, authoritatively, that the Government does not contemplate through the administration of this act any interference with honest medical practice, and that hospitals could proceed about as they pleased in administering narcotics, providing an honest intention is indicated. This came as a considerable relief to many hospital executives as the ruling on points affecting hospitals—telephone orders, administration by nurses under directions of staff, ward records, etc.—have been rather confusing. Various plans have been adopted to meet these conditions. In Youngstown City Hospital, for instance, Superintendent Bunn reported that physicians telephone their directions in regard to narcotics to interns who are privileged to use the hospital serial number in writing the prescriptions, carrying out the doctor's orders. These are charted and initialed by the attending physician on his next visit.

At the conclusion of the session, a charter for the new Association was adopted and arrangements were made to hold the next annual meeting in Cincinnati in May, 1916.

Provision was made for three classes of members: (1) active members (dues $5.00 per year) must be trustees or executive heads of hospitals, "without reference to sex, title or denomination"; (2) associate members (fee $2.00) shall be executive officers of hospitals next in authority below the superintendent, contributors to, or officers or members of an association, the object of which is the foundation of hospitals or the promotion of interests of organized medical charity; hospital physicians, surgeons, pathologists, and superintendents of nurses; and (3) honorary

REV. A. G. LOHMANN,
FIRST VICE-PRESIDENT OHIO HOSPITAL ASSOCIATION.
Superintendent German Deaconess Hospital, Cincinnati.

membership. By hearty unanimous vote Dr. Hornsby was made the first honorary member. Dr. Matson was likewise unanimously elected, and later the courtesy was extended to the complete membership of the Ohio State Medical Board.

One of the very interesting features of the conference was the splendid address by Dr. Hornsby on "What the Association Can Accomplish." Dr. Hornsby, in opening, made very clear his idea of the chief purpose of a hospital —to take care of the sick, not to train nurses or medical men; these, he holds, are subsidiary functions.

Dr. Hornsby pointed out that the public is realizing rapidly that the hospital is the best place in which to care for the sick, because in no other place may the patient benefit by the assembled therapeutic auxiliaries—x-ray facilities, diagnostic laboratories, diet kitchens, etc.

He urged a strict enforcement of the new nurse registration law in Ohio, but pointed out the desirability of not making it prohibitive. "If the training school standards are set too high," he declared, "we will be developing nurses who are too highly educated to soil their hands." He believes that two grades of nurses are needed: (1) those who are highly educated and are fitted to teach nursing, and (2) those who can nurse the sick. He urged extreme care in working out the Ohio problem so that the nurses we graduate will not be too highly trained to be of practical value in actual nursing.

The Doctor spoke, also, upon the urgent necessity of creating plans for uniform hospital accounting and advised the association to take up this study. He declared that a system which will show the cost of each day's operation in detail is a vital necessity of the modern hospital, and one that must be met intelligently if our hospital system is to be developed. He declared that it would be necessary for the hospitals of Ohio to educate the people to reimburse the hospital for free patient service—that the expenses of this free service must not be met by adding it to the charges of the pay patient in the next room.

Dr. Hornsby participated in all of the sessions and was probably the chief factor in developing the enthusiasm for the new state organization.

It was clear from the start that the subject of nurse registration and its effect upon hospitals was the topic in which all were chiefly concerned. For a time it seemed certain that there would develop irreconcilable differences among the three classes represented—large hospitals, small hospitals and nurses. At the close of the session, however, it seemed to be the unanimous sentiment that better results for all concerned would be secured through united cooperation with the state medical board and the nurses' examining committee.

Dr. Matson, secretary of the board, was largely responsible for this. He spoke for more than two hours, explaining in detail the provisions of the new law and outlining some of the problems which the medical board is facing in providing for its administration. He explained that the law presented many intricate problems arising under the

HOWELL WRIGHT,
SECRETARY-TREASURER OHIO HOSPITAL ASSOCIATION.
Superintendent Cleveland City Hospital.

exemption features (which extend registration without examination to those who have been graduated in the past). For instance, many small hospitals which have graduated nurses have since become defunct. The board can only register graduates of satisfactory schools. Were these schools satisfactory?

The board must also decide whether training school courses given in past years by schools which have since raised their standards and are now believed to have complied with the requirements were "satisfactory" courses at the time the nurses were graduated. Dr. Matson stated

that in his opinion the board would rule that a training school which had a definite course at the time the nurse was graduated, and which followed a definite curriculum at that time, would be classed as satisfactory and that the nurses would be admitted to registration—in other words, in passing upon the training of nurses who apply for exemption certificates, the good faith and honesty of the school which graduated them will be the chief consideration.

Dr. Matson requested that the Association aid the board in establishing minimum standards for the future. It has already been decided that schools to be approved by the board, from now on must have a definite curriculum that the board will be able to check; that they must give the matriculant the education promised and that they must ascertain in advance that the matriculant is educationally qualified to take up the study of nursing.

Dr. Hoy, of Wellston, member of the last general assembly, who was active in securing the enactment of the nurse registration law, declared that particular care had been exercised to give the small hospitals a square deal. He urged the association to cooperate with the state medical board to this end.

Dr. Crew, of Dayton, was unanimously elected president and Mr. Howell Wright, superintendent of Cleveland City Hospital, was elected secretary-treasurer; Rev. A. G. Lohmann, Cincinnati; Miss Charlotte Kerans, Toledo, and Miss E. J. Lauten, Ashtabula, were elected vice-presidents; and the following executive committee was chosen: Dr. W. S. Hoy, Wellston; Dr. A. C. Bachmeyer, Cincinnati; Miss Mabel Morrison, Toledo; Dr. F. C. Huth, Cambridge; Miss M. C. Echols, Massillon.

The following is a list of those registered at the conference:

Cleveland: Howell Wright, superintendent City Hospital; C. B. Hildreth, superintendent St. Luke's Hospital; Dr. J. E. Allport, Glenville Hospital (also People's Hospital, Akron, and Citizens' Hospital, Barberton); Anne Williamson, R. N., superintendent Glenville Hospital; Anna Pepper, City Hospital; Alma C. Hogle, superintendent Huron Road Hospital; Sister M. Dolores, head nurse St. Vincent Charity Hospital; Sister M. Marcelline, superintendent of nurses St. Vincent Charity Hospital; Elise Mannel, superintendent Lutheran Hospital; Norma Stein, head nurse; Dr. Paul H. Krebs, staff; Dr. E. Klaus, staff, of Lutheran Hospital.

Columbus: Robert G. Paterson, state board of health; Dr. Geo. H. Matson, State Medical Board; Dr. F. F. Lawrence, Lawrence Hospital; Mrs. F. F. Lawrence, Mary A. Jamison, superintendent Grant Hospital; Anna Johnson, Jennie C. Quinby, superintendent St. Clair Hospital; G. V. Sheridan, Ohio State Medical Journal.

Cincinnati: Albert G. Lohmann, superintendent German Deaconess Hospital.

Dayton: Dr. E. R. Crew, superintendent Miami Valley Hospital; Mrs. E. R. Crew, P. B. Scully, Miami Valley Hospital; G. L. P. Friend, superintendent of nurses Miami Valley Hospital; Dr. B. W. Beatty, surgeon St. Elizabeth Hospital.

Toledo: Dr. C. S. Ordway, chief surgeon and president of board of trustees, East Side Hospital; Charlotte Kerans, Flower Hospital.

Ashtabula: E. Jane Lauten, superintendent General Hospital; Anna Gessler, graduate nurse.

Akron: Rose K. Steinmetz, Children's Hospital; Louise C. Brand, Children's Hospital.

Cambridge: Dr. F. C. Huth, surgeon, Cambridge Hospital. *Conneaut:* Kate M. Moyer, superintendent; Jessie J. Hubbard, assistant superintendent, Grace Hospital. *Elyria:* Anna Younglove, superintendent Elyria Memorial Hospital; R. Alice Cowen, graduate nurse. *Findlay:* Roma Lambert, superintendent Findlay Hospital. *Kenton:* Sister Maria Joseph, Sister Rose Francis, Antonio Hospital. *Lima:* Margaret B. Mateer, superintendent; Lura J. Allen, Lima Hospital. *Logan:* Dr. J. S. Cherrington, Mrs. J. S. Cherrington, Cherrington Hospital; E. Gilbert. *Marietta:* Dr. S. A. Cunningham, superintendent Marietta Hospital. *Piqua:* D. H. Shaw, superintendent Memorial Hospital. *Port Clinton:* Dr. H. J. Pool, surgeon; Mrs. H. J. Pool; Lucy A. Nims, head nurse, Pool Hospital. *Ravenna:* Dr. W. W. White, superintendent White Hospital. *Salem:* Nelle I. Templeton, superintendent; Pauline M. Tweeddale, assistant superintendent, City Hospital. *Sandusky:* Miss R. H. Soutar, Good Samaritan Hospital; Sister M. Aurelia, superintendent of nurses; Sister M. Rosemary, head nurse, Providence Hospital. *Springfield:* L. J. Napier, superintendent City Hospital. *Warren:* Mary E. Surbray, superintendent City Hospital. *Youngstown:* Fred A. Bunn, superintendent Youngstown Hospital. *Wellston:* Dr. W. S. Hoy, Hoy Hospital.

The officers of the Association, immediately upon adjournment, issued the following call for members:

"The membership list of the Ohio Hospital Association for both active and associate membership is now open. Applications should be filed with Mr. Howell Wright, Superintendent City Hospital, Cleveland. Plans are now being worked to keep the members of this Association, through some form of bulletin service, in close touch with the State Medical Board during the development of the plans for nurse registration and with the Medical Department of the Ohio Industrial Commission. All connected with hospitals qualified for membership should make immediate application."

The Building of the Hospital: Construction[1]

BY OLIVER H. BARTINE,
Superintendent of the New York Society for the Relief of the Ruptured and Crippled.

Within the past decade vast strides have been made in the practice of medicine and surgery, but it is the feeling of the writer that even greater progress has been made in the field of hospital construction and equipment, so that today the facilities providing for the care and treatment of the sick and afflicted are such as were not considered possible a few years ago.

In complying with the request of our beloved late President of this Association, Dr. William O. Mann, to prepare a paper on hospital construction, it has seemed best to me to give special consideration to those phases of the work which are more frequently overlooked by the building committee and to refrain from an attempt to cover the general construction details which have been ably presented by others at our previous conventions. It is obvious that to cover fully the field of hospital building construction would involve the writing of several volumes, so that the writer trusts that you will bear with him while he deals briefly with matters fundamentally important.

The architect, the consulting engineer and the builder are specialists in the different phases of construction. If they are students of the methods and developments in the hospital field, so much the better. Indeed, it is most desirable that they should be students, but more important that they should have had extensive experience in this work, but it is absolutely necessary that they should place much reliance upon the instruction and advice of those occupying and operating the new hospital and upon the building committee. Without the cooperation of those versed in the methods and purposes of the hospital and those experienced in the direction and management thereof, it can but be expected that the new building will be an architectural and engineering monument rather than a serviceable hospital. Therefore, it is most essential that the hospital authorities give freely of their time to the study and consideration of the various problems involved, and have frequent conferences with the architects, engineers and builders. And this is true regardless of the extent of the experience which the architect, engineer and builder may have had in general hospital construction, for every hospital has its individual needs, peculiarities and problems.

[1]Paper read before the Seventeenth Annual Conference of the American Hospital Association, San Francisco, June 22-25, 1915.

The work of many hospitals has suffered seriously through the lack of proper consideration by the members of the staff and building committee, who have placed too much reliance and responsibility upon the architect and the engineers, and upon individuals who have exercised too great an influence over the committee. This is not intended to imply that the staff and building committee should understand or dictate the materials or methods of construction, in so far as they do not affect the work and cost of the hospital building, but the remark relates more especially to the general arrangement and the equipment required to meet peculiar needs of the particular hospital. Some of the defects and the remedies proposed therefor are referred to in a paper by the writer on "The Building of the Hospital; Its Organization and Methods," read before the Hospital Alliance at the Academy of Medicine in New York on December first, last, and I will therefore not dwell on this phase of the work at this time.

THE FIELD OF THE HOSPITAL

Hospitals, like churches, should give a greater degree of consideration to their relations to the needs of the community. These, rather than personal reasons or desires, should serve as a guide in determining whether a particular hospital should be built in a particular locality. The creation of a hospital for special or personal reasons, regardless of needs, should be avoided. A plan should be devised whereby representatives of existing institutions and other interested bodies could pass experienced judgment upon a proposal for a new hospital before the establishment of such institutions by private bodies. It may be that this should not apply to strictly private hospitals where the public will not eventually be called upon for its support. The state boards of charities, whose function it is in many states to pass judgment upon such applications, should, and in many cases are, giving this matter their very serious consideration. Some local governing body should be in control of this matter in each state or section of the country.

SITE

As in the case of the establishment of the hospital, the needs of the locality, and not personal inclination or preference, should guide in determining the location of a new hospital. The population, its character, and its needs should be carefully studied in connection with any site considered. The accessibility of the proposed site should also be carefully investigated; and its freedom from nuisance is most important.

The particular section of the country or city in which the hospital is built may have a direct bearing upon the nature of the service to be rendered by the hospital, particularly if the community is largely populated by the poor. Accessibility is also most desirable from the standpoint of the trustees, attending and visiting physicians, the surgical staff, and visitors to the hospital.

The elevation of the site, existing surroundings and the probable future of the neighborhood should also be the subjects of careful study. The site may also have a direct bearing upon the type of building proposed. Detailed consideration must be given to the problems of drainage, including the natural drainage of the subsoil, so that excessive expenditure for waterproofing of foundation and basement walls, or the continuous use of the drainage pump will not be involved. Similarly the possibility of sewer, water, electric, gas and telephone connections must be considered. A number of cases might be cited where these important matters have been overlooked, particularly the matter of drainage and water supply, with a resulting large expenditure of money which should have gone into the construction of the building and its equipment. Mature judgment in the selection of the site will result in a large saving of money which may otherwise have to be spent for water supply and other service connections.

Another most important consideration in the selection of the site should be the character of the ground as related to the matter of basement and foundations. To a large extent this is an unknown factor in any case, but a large amount of data relative thereto can be had by an investigation of the surface appearance of the site, with a further investigation of the conditions found upon excavation for other buildings in the immediate vicinity. The best information in this direction may be secured by making test holes or borings at various points on the proposed site of the hospital. Without such investigations the hospital board may find itself in possession of a piece of property which will involve rock excavation, piling, or even caisson work, costing a large sum of money which could be better used in the construction of the building proper. In the case of a hospital building recently constructed $100,000 was spent for rock excavation in excess of the cost of the same amount of earth excavation, this sum representing 9 percent of the total cost of the building.

Where there are existing buildings on the lot lines, the foundation walls of which do not go down so deep as will those required for the proposed hospital, expensive shoring of adjoining buildings may be required, this being in some cases so extensive as to become a serious item of cost. This should be given its due consideration in the selection of the site and in estimating the cost of the proposed building. The New York City building code specifies that the excavation for a new building may be carried fifteen feet below the curb line without involving the owners of the new building in expense due to damages to adjoining property, beyond which depth the owner of the new building must assume the expense of shoring and damages to adjoining property. Other cities have similar building code regulations.

A most serious mistake is sometimes made by the selection of a site which limits or determines the size and character of the building or the number of buildings of the new hospital. A small plot may so affect the arrangement of the buildings, or the units thereof, as to affect seriously the usefulness of the hospital. An irregularly shaped plot may have exactly the same effect. The building, or the arrangement thereof, should not be dependent on the site, but the site should be selected to suit the arrangement, character, size and number of buildings required. Any site which involves a limitation of the number, size or character of the buildings, or an illogical relation of the buildings, or the units or departments thereof, should be avoided. In determining upon the site the most careful and liberal provisions should be made for the future growth of the institution.

In a city, or portions thereof, where land is held at almost prohibitive prices the most careful consideration must be given to the cost of the site, and this matter should be determined in such a way that the expenditure thereof shall not rob the building fund to an extent which makes impossible the construction of a suitable building.

In an effort to secure the best site at the most reasonable terms one hospital secured prices on fifty sites without it becoming known that the property was desired for the construction of a hospital building. In this way the trustees obtained the best possible information as to the relative values of property, which, taken into consideration with the needs of the different communities and the

other considerations affecting the availability of the various sites, enabled them to purchase a site answering every purpose, on which there were twenty houses held by nearly twenty different individuals, at a cost below the market price for realty in that particular section of the community. In a similar way some such plan could be carried out in nearly every instance.

GENERAL ARRANGEMENTS

The general arrangement of the new hospital most vitally affects its future success. This should not be limited in any way by extravagance in plan or exterior. Neither the architect nor the committee should regard the new hospital building as a monument to themselves, to be arranged elaborately or ornamented at the expense of the convenience or utility of the building or its service to patients.

The exterior of the building may be constructed of common brick, of face brick, or of various stones, with a very material effect on the cost of the structure and without any effect on the efficiency of the hospital in carrying on its work. Therefore, it is felt that the plan of the hospital should be the first consideration and the ornamentation of the exterior a lesser consideration.

With reasonable skill and study a very satisfactory exterior may be obtained with the use of common brick and a small amount of terra-cotta or stone ornamentation. If sufficient funds are available to permit of the use of pressed brick and a greater amount of stone ornamentation without affecting the plan and scope of the hospital, this is desirable, but an ornate stone building or stone trimmed building should be built only where ample funds are available. Too great emphasis cannot be placed on the fact that the convenience of the patients and the service rendered to them should be the first consideration.

The location of the department occupied by resident patients may be more remote, and thus less to be considered than the departments serving the out-patients or constituting the dispensary.

It is unfortunate that we find in some of the newer hospitals the out-patients' and emergency departments so remote from the entrance as to be most inconvenient for the patients served by these departments. In some cases the first floor is so occupied by other departments that it becomes necessary for the visiting patients to walk upstairs or use the elevators. In other cases we find it necessary for the greatest number of patients, which are those using the out-patients' and emergency departments, to walk from a block to a block and a half around the building before reaching their entrance. Outside entrances directly to these departments are desirable wherever possible. In any case the patients should be given the first consideration in such matters.

The general practice of locating the operating suite at a remote section of the building, where the required isolation may be had, is to be commended, but nevertheless this should be so located as to be accessible to elevators or passageways connecting with all departments of the hospital which are served thereby.

The ambulance station and power plant should, wherever possible, be located as remotely as may be from the portions of the hospital buildings occupied by patients or employees. In many cases these departments may be advantageously accommodated in one separate building, together with the laundry.

Too frequently in the planning and construction of a new institution, especially where the institution consists of a number of buildings, the power plant and power house are given the last consideration. This should be one of the first things provided for, so that the power house may be erected and the plant installed in ample time to supply all the necessary heat, light and power incidental to the erection of the other buildings. Such a method of procedure will often materially reduce the cost of the construction of the building.

While it is manifestly desirable that the power plant, with its boilers, engines and refrigerating plant, should be remote from the main building, it is possible, in the case of small hospitals, or in the case of larger hospitals on sites of limited area, to place the power plant directly in the basement of the building and still provide for such quiet operation and isolation of the noise as to cause no annoyance. This may be accomplished by insulating the foundations of all moving machinery so that the noise and vibration incidental to the operation of the machinery cannot be communicated to the building, and by the use of sound and heat insulating ceilings which prevent the noise and heat incidental to the operation of the plant from being communicated to the rooms above.

The source of coal supply and ash removal should also be carefully considered and be located as remotely as possible from occupied apartments.

A careful study must be made of each and every department in order that each and every detail essential thereto shall be provided in a convenient manner and so that all departments may be properly correlated. In this study each department head and especially the chief physician and chief surgeon, should consult with the superintendent of the hospital (who should be a member of the advisory committee to the building committee) in order that no need may be overlooked and that the location of all departments may be properly related. Upon the superintendent principally, supplemented by the efforts of the building committee, will fall the duty of seeing that departments are properly correlated and that over-elaboration and extravagance are avoided. Contrary to a frequently expressed opinion, upon the superintendent must the greatest dependence be placed to exercise proper judgment in this respect. A well versed hospital specialist also would be of great assistance in guiding the building committee, the architect and the engineer through the shoals of insufficient or excess equipment.

In a like manner must the most careful consideration be given to the making of proper provision for future extensions of the hospital building. This must be provided for in the most flexible manner possible, as it is very difficult to foretell in what directions any hospital may grow most rapidly. Particularly in the design of the heating and ventilating and power plant are the services of a consulting engineer of extensive experience in designing hospital equipment desirable. Such experience is the best guide in so designing the plant as to provide for extensions and additions in every possible direction at the least expense.

FOUNDATIONS

The importance of the hospital foundation cannot be over-estimated. The greatest amount of skill and experience is essential to the determination of the character of the foundations. These bear a very direct relation to the nature of the ground upon which the foundations rest. As has already been stated, ground requiring piling or construction of foundations by means of caissons should be avoided in every instance because of the expense involved in such work. Where an excessive amount of rock excavation is involved, or quicksand or other unstable material is encountered, a very large amount may be spent upon the foundation construction to the injury of the rest of the building.

The construction of the foundations should be under the direct supervision of a "clerk of the works," or resident superintendent, who should inspect each foot of the ground upon which the foundations are to rest, and the placing of all materials used in the foundations. More cracks, and settling of buildings, are due to defective foundations than to any other cause. The superintendent of construction should be a man of experience and ability to maintain strict discipline, for he is charged with the gravest responsibilities in connection with the foundation problem. The various contractors will often endeavor to influence him in accepting materials that are not in strict compliance with the specifications. He should be very skeptical of any change in material that is advised, for in most cases it is likely to be of inferior quality and of advantage to the contractor only. He should be very observant and attentive to his duties, for a small amount of defective work is enough to weaken the whole structure or building. This will also apply to the foundations for all machinery in the building.

The clerk of the works should remain upon the work until the building is completed in the case of any building costing $50,000 or more. The careful supervision of the building construction will save a great deal in the later cost of maintaining the building and will result in the satisfaction of every one in a properly constructed building. If the man so employed be thoroughly acquainted with the installation of the mechanical equipment, so much the better, but such a combination in one man is rarely obtainable.

WALLS

Reference has previously been made to extravagance in the construction of the building. The exterior appearance of a building does not add to its utility, and therefore great care should be exercised in regard to the style of architecture employed and the class of materials used. The usefulness of the building is chiefly dependent upon the plan and equipment of the interior. Economy and efficiency should, therefore, be the watchword in the construction of the building.

Whether brick or stone, or a combination of the two, shall be used on the exterior of the building must be determined upon the basis to which reference has previously been made.

Whether the walls shall be of self-supporting construction or of steel construction will depend largely upon the size and height of the hospital. Ordinarily any hospital over two stories in height may best be constructed with steel structure. Reinforced concrete for wall construction may only be used to advantage in large buildings.

All walls below grade should be carefully waterproofed, either by the use of hydrolithic cement or by the more generally used process of waterproofing felts and pitch. Above grade the exterior walls should be damp-proofed to prevent dampness within the building.

Interior walls should in every case be fireproof and soundproof. By the use of terra-cotta blocks or pyroblocks, or similar plaster blocks, both purposes may be accomplished, inasmuch as they are made of fireproof materials and their construction is such that they provide one or more air spaces in the thickness of the wall.

Only the best of materials should be used for plastering in order to procure a hard, smooth surface and a wall surface which will be free from cracks and disintegration.

FLOORS

The subject of flooring in a hospital is a much debated one. The fact of the matter is that careful consideration should be separately given to the character of flooring to be used in each department of the hospital, and suitable flooring, therefore, should be determined upon.

Certain fundamental considerations underlie the general question of flooring, and the most important detail thereof is the foundation for the flooring. Care should be exercised to see that a thoroughly substantial foundation is provided. This is especially important where composition floors are used, in connection with which it is especially important that pipes should not be concealed in the flooring where such floors are used, for the space left for such pipes constitutes a break in the foundation or flooring material which is sure to result in serious cracks. To a considerable extent this is also true where tile or concrete floors are used. Where wood floors are used pipes may be run in the floor construction if there is placed on the top of the concrete floor slab a floor fill of cinder concrete not less than 4 inches, and preferably 5 inches, in depth. It is extremely difficult to place steam pipes properly concealed in the floor construction with less than a 5-inch floor fill, for in addition to the pipes there must be provided space for insulation and for the pitch of the pipes. In many cases it is deemed necessary to place such pipes concealed in the floor construction, but this is not desirable if it can be avoided, and where it becomes necessary it is to be recommended that trenches be provided for the pipes with removable trench covers or floor pockets.

Another most important consideration in connection with floor construction is the soundproof quality thereof. In most modern hospital construction the floor slabs are of reinforced concrete. If a wood or tile floor is used, provision for soundproofing must be made by the placing of a cinder concrete fill on the concrete floor slab under the wood flooring. If composition floors are used little trouble will be experienced from the noise.

Probably the most satisfactory floor for the operating room is a hexagonal non-absorbent gray tile, which, when carefully laid on a proper foundation, with closed cemented joints, will give thoroughly satisfactory service. The gray tile is less tiring to the eyes than is the white tile and less difficult to keep clean. The tile should be thoroughly vitrified and should have an impervious surface.

For the wards also this gray tile makes a very serviceable floor and gives a very pleasant appearance, while it has the merit of being most durable.

Linoleum also has many advantages in wards and private rooms and also in private room corridors, but it is subject to the objection that it is easily marred and cannot withstand rough usage as well as the tile. Also it is absorbent, especially when the surface is worn off. If linoleum is used extreme care must be exercised in the selection of material and in the method of laying it. In connection with linoleum a light tile border is sometimes used with very satisfactory results. To avoid crevices between the tile and linoleum a metal strip may be used to fit into the grooves between the two materials, this being made with narrow flanges spreading over the edges of the linoleum and tile.

Despite objections urged against wood flooring it still finds most favor in private rooms. It gives a much more homelike appearance with resulting satisfaction to the patients. If the wood flooring used is thoroughly seasoned and dried, and if the committee and architect cause proper supervision to be exercised in its selection and laying, there is no reason why the objection commonly raised to the wood flooring, that it shrinks and results in annoying cracks, should exist. (Objections are justly offered to the appearance of linoleum, tile, or terrazzo in private rooms.)

In pantries, corridors, dressing rooms, toilets and other

service rooms and spaces, tile and terrazzo floors are found to be the most satisfactory and durable. In some cases, however, the composition flooring has been used in these spaces with satisfaction, but the greatest of care must be used in providing proper foundations therefor and in selecting and laying the material.

For the out-patients' department preference should be given to a light colored flooring. Tiling is found to be more expensive than terrazzo and preference is, therefore, in many cases given to the latter. The Heatherbloom tile makes a very attractive appearance in an out-patients' department waiting room.

In the laundry and kitchen the tile or terra-cotta floors would be most satisfactory except for the objection of the employees that these hard floors are severe on their feet. For this reason the composition floors are found very satisfactory in kitchens, and, except in the wash room, in the laundry. Asphalt flooring has also been found satisfactory in kitchens and laundries, but care should be used not to lay the asphalt flooring near the ranges in the kitchen. A small area of vitrified brick flooring or cement should be placed about the range. In the wash room of the laundry a cement or asphalt floor will be found most satisfactory, the latter being the easier on the feet of the employees.

In the basement the cement flooring is no doubt the best. The same may also be said of the floors of the sleeping rooms and dining rooms for staff and employees with adjacent corridors. This is especially true if the floors are painted with a hard surface varnish paint. Or they may be covered with linoleum.

From the standpoint of daily cleaning and maintenance the terrazzo flooring is unquestionably the most economical and satisfactory flooring of the present day.

The approximate relative cost of various flooring materials, as stated by Mr. H. M. Hooker, are as follows, the material of the highest cost being first stated:

Marble.
Cork tile.
Rubber tile.
Tile, clay, ceramic, encaustic.
Mosiac tile.
Slate.
Terrazzo.
Composition flooring.
Wood, hard maple.
Asphalt.
Linoleum.
Portland cement, mortar finish.

TRIM

Wood trim is still largely used in hospital buildings. All wood, wherever used in the building, should be properly and thoroughly dried and seasoned, and the most careful inspection should be given to it. Flat upper surfaces, mouldings and projections should be most carefully avoided. The design of the trim throughout should be such as to eliminate dust-lodging places. It is most unfortunate to find in many of our modern hospitals, at least in some of the departments, numerous dust-catching mouldings, cabinet tops and shelves. The cleanliness of the building depends largely upon the design of the interior finish, and therefore the greatest care should be exercised from the beginning as to the details of the doors, windows, closets, radiators, pipes, etc. When one enters a hospital building the first impression has much to do with the general impression of the hospital, particularly with the critical physician, and also with the hospital authorities and the casual visitor.

To a very large extent the use of the wood trim is being supplanted by the use of metal doors, window frames, window sash and general trim. While this represents a material increase in the expense attached, this matter should be given the most serious consideration by the building committee. It is particularly to be recommended that the corners in the main thoroughfares be reinforced with metal.

Many opportunities are overlooked for the provision of cabinets or closets in the walls of the rooms where they are most desirable, particularly in the matter of receptacles for bed pans, urinals, etc. Closets for these utensils should be thoroughly ventilated.

Hangings should be omitted as far as possible, but may be required to a slight extent in the private rooms, sun rooms, general recreation rooms and in the apartments of the superintendent, staff and employees, to give a homelike appearance.

AREAS

In connection with many buildings the basement may be made serviceable by the use of the areaways. To provide properly for the ventilation and light of the rooms which they serve they should be of ample area, and the walls thereof should be lined with a white or light glazed brick, or with a light cement finish. They should, in every case, be thoroughly drained, and they should be readily accessible from the outside or by means of ample windows from the inside. Where gratings must be placed over these areas they should be substantial and yet open in design, and they should be removable.

FIRE EXITS

Of the necessity for proper fire exits little need be said, for these must meet the requirements of all city building codes, and this is thoroughly understood by the architect and builder. Outside fire escapes are in many cases desirable, but interior enclosed fire stairways are largely used.

COLOR SCHEME

Decision upon the color scheme throughout the building should not be hastily made, for the color scheme has much to do with the agreeable appearance of the hospital, and also has a direct bearing on the labor involved in the care of the interior. Colors should not be selected from the sample color sheets containing a number of colors, but by means of an actual application of the proposed color upon the walls of the rooms. By this means the members of the building committee may obtain a proper idea of the effect of the color proposed, and be enabled to make intelligent selections. The effect of surroundings and light upon various colors is such as to vary the effect of certain colors very materially.

In many hospitals one feels the lack of warmth or comfort due to an unfortunate choice of colors. Possibly the best way to obtain proper information regarding the selection of colors is by means of visits to existing hospitals where satisfactory color schemes are in use. The wall color must necessarily vary with the different departments or units of the hospital, and it should be considered with a view to obtaining the best colors for each particular unit. Care also should be exercised to procure those materials for wall finish which will give the most sanitary and lasting service, and which can be readily cleaned.

HEATING AND VENTILATING

The degree of efficiency with which the building serves its purpose and is made comfortable and convenient depends most largely upon the character and completeness of its mechanical equipment. Quite as important also is the fact that the heaviest of the operating expenses of the

hospital are those connected with the heating and power plant, and the extraordinary repairs and replacements necessary there.

Regardless of the differing views as to the status of artificial ventilation as applied to the hospital, there can be no disputing the fact that the heating plant of the hospital is a most important department. Provision must be made for the heating of the entire building and for a source of steam for laundry, kitchen and sterilizing work. Further, there should be thorough means of ventilating all toilets, kitchens (including diet kitchens), laundry and many other service rooms. Very few there are who do not believe in the importance of a complete artificial ventilating plant for the operating room. It is believed that the consensus of the best opinion also requires that there should be provided exhaust ventilation for all large wards, and in case of hospitals built in congested districts in the cities a supply of fresh air by means of an artificial ventilating system is also desirable.

A great deal is said of the success of natural ventilation, but it may be questioned whether the exponents of such a method of ventilation give proper consideration to the nuisance caused by open windows because of dust and noise, and to the effect of the dry air resulting from natural ventilation, as well as to the difficulty of controlling this method of ventilation.

These are subjects upon which there should be a very definite understanding, and upon which dependence should be placed upon a consulting engineer having extended experience in the design of such equipments for modern hospital buildings. By the employment of such a consulting engineer the building may be sure to have incorporated therein the most modern and improved methods of ventilation with freedom from an over supply of apparatus.

A vast amount of experimentation is at present in progress relating to the problems of ventilation, and it is to be hoped that definite standards will soon be agreed upon which will meet with the approval of the medical and engineering professions, as well as the approval of those who are responsible for the payment of the operating expenses. Possibly the most interesting and encouraging investigation of the problems of ventilation is that now being conducted by the New York State Commission on Ventilation, of which Professor C. E. A. Winslow is chairman; the other members of the Commission being Mr. D. D. Kimball, President of the American Society of Heating and Ventilating Engineers; Professor F. S. Lee, of the College of Physicians and Surgeons; Professor Edward Lee Thorndike, of the Teachers' College, Columbia University; Dr. James Alexander Miller, of Bellevue and Allied Hospitals, and Prof. Earle B. Phelps, of the Hygiene Laboratory, Department of Agriculture, Washington. This Commission has available for its investigation a fund of $75,000, and has an experimental laboratory at the College of the City of New York and an experimental school plant at Public School No. 51, the Bronx, New York City.

Serious objections may be offered to any detail of the heating and ventilating equipment which is so arranged as to prevent thorough cleaning of all parts. To this end the hospital type of radiators should be used, these being constructed with an enlarged space between the radiator sections, and the radiators should be suspended from the walls with a space of not less than three inches, and preferably four inches, at the back of the radiators, and not less than five inches between the bottom of the radiators and the floor.

The ventilating grills should be so installed that they may be readily removed or be readily opened to permit of cleaning of the backs of the grills and the connecting ducts.

So far as possible the pipes of the heating and plumbing systems should not be concealed. If they are not easily accessible, a repair, which in itself may be very slight, may involve a serious expenditure for the cutting of walls, floors or ceilings.

Where vertical pipes must be concealed in the walls it is desirable that ample doors should be placed over the chases so as to permit of access to the pipes. In a similar way pipes concealed in the ceiling may be made accessible by the use of doors adjacent to the position of the pipes, and preferably all such doors and their frames should be of metal. Pipes concealed in floors should be made accessible by placing them in trenches with removable sections of the floor, floor or trench plates over the pipes.

The cost of the heating and ventilating installation is a considerable item in the total cost of the building. Too often this cost is reduced by the use of insufficient apparatus, and more often still by the use of cheap materials which involve a high maintenance cost. Also the design of the installation is often accompanied by an entire lack of understanding of the particular needs of the hospital, and without the selection of the best apparatus for the purpose. The installation should be made with a view to the least possible cost of maintenance.

To some extent every hospital needs a ventilating apparatus, and some hospitals need a thorough artificial ventilating system. But it must be understood that the operation of the ventilating system costs money. Operating expenses may be reduced by a failure to operate the ventilating system, but in such case not only is the comfort of the hospital affected, but its efficiency is lessened, and the original cost of installation is wasted.

The operating and maintenance cost of the heating and ventilating plant is possibly the largest single item of cost in the operation of the hospital. For this reason the maximum of skill should be exercised in the design and installation of the plant. The purpose and needs of the hospital are so varied that the design of the heating and ventilating plant therefor is most complicated, and only the maximum of experience and skill will bring about the most satisfaction and the least maintenance and operating cost.

Because of the fact that the ultimate results are largely dependent upon the work of the operating engineer of the hospital, and because many of these men have had a large amount of experience in operating and maintaining hospital plants, it will be found of inestimable value to all concerned if the operating engineer be brought into intimate contact with those making the plans for the hospital and its equipment. Multitudinous problems will arise concerning which no one will have the same intimate knowledge and experience as will the operating engineer. Many of these men are most capable and conscientious and their experience will be found most helpful. This is particularly true in the case of determining upon the exact nature of the apparatus and equipment to be installed. It is not to be expected, however, that these men will be capable of designing the equipment of a new hospital building, large or small, for they are naturally not versed in the theory of the work, and there are many problems of design and installation with which they have had no experience. The designing consulting engineer must combine theory, experience and practice, and these the operating engineer may supplement with his practical experience with certain apparatus and with the special problems involved.

PLUMBING

The type of fixtures to be used in connection with the plumbing systems are as varied as are the different pur-

poses of hospitals and the different departments thereof. As a rule too little consideration is given to the exact needs of a hospital, and standard plumbing fixtures are often used instead of special fixtures available for hospital purposes. The fittings applied to the plumbing fixtures should be simple in design but heavy and substantial, and they should be especially designed for the purpose served.

Duplication of plumbing lines so frequently occurring in hospitals should be avoided wherever possible, and the plumbing piping system should be simplified to the last degree.

Where plumbing pipes must be placed under the floor they should be laid in trenches with removable covers, as in the case of steam pipes. The suggestions made relative to doors giving access to chases in the wall, or furred spaces in the ceiling wherein pipes are concealed, apply to the plumbing piping system as well as to the heating system.

In the case of one large hospital the toilets and service rooms on the various floors were arranged directly over each other, so that the entire system of plumbing piping was exposed in these rooms and thus was accessible at all times. The pipes are covered with painted asbestos coverings in such a way as to make it quite as easy to keep them clean as to keep the walls clean; and certainly the tremendous advantage in having the pipes thus accessible in case of necessity of repairs quite overbalances any objections to the exposed pipes.

Cleanout plugs in the soil and drain pipes are customarily required by plumbing codes, but in the absence of such requirements extreme care should be used to see that brass screw-cap cleanouts are provided throughout the system. This is especially important in connection with waste lines from the pantries, carrying grease, and also in lines connecting to the operating rooms, dressing rooms and other rooms where special conditions demand.

Care should be exercised in the roughing in of the plumbing system to see that all piping in the waste and drainage lines is reamed internally so that the lines shall be free from burrs and other obstructions. Such care will save much later annoyance and expense.

Very frequently fire hose is found suspended on hose racks exposed on the corridor walls in hospitals. A much better method is to provide a cabinet with a glass door containing the fire hose, the face of the cabinet being flush with the wall of the corridor.

ILLUMINATION

The development of the art of illumination is progressing rapidly. The subject of hospital illumination is just beginning to receive the attention which it merits. The most careful attention to this phase of hospital construction is demanded on the part of the hospital authorities, the architect and the consulting engineer. Special problems relating to the efficiency and comfort of the illumination are involved, and in working out the best results in these directions the economical operation of the illuminating system may not be overlooked. It is not uncommon to find a new hospital building planned and built without any conferences on the subject of illumination between the architect, engineer and hospital authorities, the idea being in this instance, as in some others, that the architect and engineer are engaged as experts and should know just what will best meet the conditions. Such a plan ignores the fact that the building may have, and usually does have, peculiar problems on which the hospital authorities and staff alone are best informed, and this plan further disregards entirely the vast amount of valuable experience and information which the superintendent, doctors and operating engineer may have accumulated in the conduct of this particular hospital or other hospital buildings.

With the advance of the art of illumination new electric lamps of increased efficiency will be available, new designs of fixtures will be made to meet existing conditions and new ideas, all of which will modify the opinions of those connected with this work.

A general rule should be laid down that the lighting fixtures should be simple in design but neat in appearance, as free as possible from ornamentation, heavy and durable, easily cleaned and not expensive to repair or replace. The reflector now in use on the indirect and semi-indirect fixture is a troublesome dirt collector which is not easily cleaned, and expensive to renew in case of breakage. The problem of obtaining a fixture free from these objections needs careful study, for the indirect and semi-indirect methods of illumination have many advantages which warrant their retention.

Possibly the operating room offers the greatest difficulty in the matter of illumination. That there should be no permanent ceiling fixture in the operating room seems certain. Despite extreme care it will be found to be a dirt collector and distributor, and it seriously concentrates heat over the operating table. I have been conducting some experiments in this matter of operating room lighting with most interesting results.

The most satisfactory result has been obtained by building in at the junction of wall and ceiling entirely around the room a trough containing a large number of electric lights of small wattage, the sizes of which depend upon the size of the room, with other lights placed in a box built into the ceiling directly over the operating table, and still other similar lights built into the wall at each side of the operating room at a height approximately that of the operating table, these latter being used only when required. Supplementing this arrangement there should be one or two plug outlets to which portable lights may be connected for special illumination when and where desired.

The lighting trough referred to is fitted with suitably shaped polished or mirrored reflectors with cover plates set flush with the surface of the wall and ceiling. The cover plate or frame is hinged and contains a glass screen, there being ventilated openings in the frame. The exposed surface is finished in white enamel or may be nickel plated. The setting of this fixture is so arranged as to throw the light principally on the operating table, but the reflected light from the ceiling and walls results in a most uniform degree of illumination. The extent of this illumination is such as to obviate entirely shadows at the operating table because the rays of light come from a multitude of directions. The switch control may be so arranged as to turn on all the lights or alternate lights in the trough, as desired.

There are many advocates of the use of dark colors on the walls of the operating room. The author feels that this is a mistake, inasmuch as dirt may not be easily detected and the darker colors interfere with proper reflection and diffusion of the light from the walls. While a relief from the glazed white walls may be desirable, it is believed that this may be accomplished without recourse to the very dark walls.

Recent tests made by illuminating engineers show that light is absorbed by walls of different colors as follows:

White	18%	Emerald green	82%
Chrome yellow	38%	Dark brown	87%
Orange	50%	Vermilion	88%
Plain deal	55%	Blue green	88%
Yellow	60%	Cobalt blue	88%
Pink	64%	Deep chocolate	96%

This refers, of course, to the reflecting effect of these colors, that is, the effect of the lighting on the room is not exactly in proportion to the above figures. It will, however, be noted that only the first two colors (white and chrome yellow) reflect more than half of the light received. The effect of dark walls in the operating room is therefore evident, and if these are to be used the volume of light must be materially increased to provide the same degree of illumination at the operating table. It is believed that the discomfort to the operator may be overcome without recourse to undesirable dark colors. The omission of the glazed surface on the wall, substituting a flat light finish, will go far towards accomplishing this desired result.

The general use of the three and four-way switch is to be recommended, by means of which the first push on the button will turn on one light, which may be of small wattage for night use, the second push turns on the remaining lights, the third push puts out all except the first light, and the fourth push turns off the small light.

The electric equipment of the modern hospital has become most complicated, but no detail of the hospital is more important than its electric equipment. The wiring system is almost universally the three-wire 110-220-volt system, the lights being operated at 110 volts and the motors being connected to the 220-volt service.

Special outlets should be provided in all wards, private rooms and treatment rooms for special devices for heating, and in the kitchens, especially in the diet kitchens, similar outlets should be provided for cooking and other work. Similar outlets for laboratory purposes should be provided in all laboratories. These special outlets may well be located about three feet from the floor.

It is most desirable that the lighting, power and special service outlets should be connected to separate wiring systems back to the main switchboard in the basement.

The telephone equipment is a puzzling problem. To maintain public service telephones in all departments is expensive. The best arrangement for a large hospital is doubtless the maintenance of the public service telephones in the general offices and the principal departmental offices, with an interior private telephone system where additional telephone service is important for the administration of the hospital.

In private room pavilions a telephone plug outlet may be desirable in the private rooms to which telephones may be connected when a patient's desire and condition make this permissible. For the service of the doctors who spend much of their time about the building, a device largely used in mercantile establishments may be desirable. This consists of a horizontal rectangular box containing signal lights back of a dark glass plate carrying numbers corresponding to numbers given to the doctors, which are visible only when a light back of the plate is flashed. Thus if the doctor assigned number 8 is in some part of the hospital and is wanted at the telephone the operator can flash a light at every one of these signal stations which illuminates the number 8 and the doctor can then go to the nearest telephone.

The nurses' call system is a most important part of the electrical equipment. Annunciators at the nurses' stations or in the service rooms, operated by pear push buttons at patients' beds are largely used. Frequently this system is supplemented by a light over the door which lights simultaneously with the drop at the annunciator when the pear push is operated by the patient. This system should be arranged so that the annunciator can be reset and the light put out only when the nurse visits the room of the patient. In some cases the separate units of the annunciator system are supplemented by a general annunciator system in the main office, so that the time intervening between the patient's call and the visit of the nurse can be detected by the proper person in charge. This system is believed to be better than the system of semaphores over the doors entering the private rooms, which are usually reset by the nurses upon entering the rooms; the fault of these is that these semaphores can be reset without the nurses entering the room.

In large hospitals a general clock system is also desirable, the clocks being located at convenient positions throughout the building.

A watchman's clock system is also desirable. This, when properly used, insures proper safeguarding of the building and lessens the insurance rate. The most desirable form of watchman's clock system is that which utilizes the portable clock carried by the watchman, with the keys located at stations throughout the building in such a way as to insure the watchman's visit to every portion thereof.

A fire alarm system is also desirable. The most approved system is the selective system, with an auxiliary connection to the city or community fire alarm system such as is largely used in hospitals and school buildings.

POWER PLANT

The question of the advisability of the installation of an electric power plant depends only upon the size of the hospital. Wherever fire room service for twenty-four hours is necessary and boilers of 100 H. P. capacity or greater are required, there can be little doubt as to the advisability of installing an electric power plant. In practically all hospitals steam at sixty pounds pressure is required for sterilizing purposes and also for laundry purposes. Steam also is required for cooking purposes at 40 pounds pressure. The piping system for the sterilizing and laundry work may be combined, but the cooking apparatus should be provided with a separate system of piping, while the heating is connected with still another separate system of piping. Thus the steam must be generated originally at 60 pounds pressure and be reduced to 40 pounds pressure for cooking and to approximately 2½ pounds pressure for heating purposes. It is just as easy and quite as economical to generate steam at 80 to 100 pounds, or even 125 pounds pressure, for the operation of engines for driving electric generators.

The exhaust steam from the engines may be passed directly into the heating system through a grease extractor and be used a second time; thus the electricity produced becomes a by-product. Otherwise the steam leaving the boilers at a high pressure must be passed through a reducing valve to reach the low pressure required for heating. The engine merely serves as a reducing valve and the most efficient kind of reducing valve. Only about seven to ten percent of the thermal value of the steam is utilized by the engines and the balance may be utilized in the heating system, thus making double use of the steam. In practical experience it has been found that the exhaust steam from the engine provides for a better circulation in the heating system, largely compensating for the small loss in thermal value. Usually in hospital work the amount of steam required by the engine and passing through same to the heating system is insufficient for heating purposes, and the deficiency is automatically made up by means of steam passing through a reducing valve.

In the summer, when heat is not required, a considerable proportion of the exhaust steam may be utilized for heating water for laundry purposes, for heating driers and for other purposes.

COST DATA — TABLE Nº I — HOSPITAL BUILDINGS

BUILDING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		AVERAGE COST PER CU FT
CUBITURE OF BLD'G	2,096,000	1,913,287	1,687,000	3,330,000	4,230,103	1,343,815	754,355	1,406,400	508,375	1,327,415	905,000	249,700	210,300	1,718,010	1,837,931	927,415	534,150	1,967,762	3,768,782	777,506	367,200	3,704,287		
NO OF PATIENTS	225	181	152	500	450	150	150	232	70	179	250	65	—	410	350	—	—	407	303	150	110	220		
CU FT PER PATIENT	9,320	10,603	11,098	6,676	9,400	8,958	5,042	6,062	7,262	7,416	3,623	2,837	—	4,190	5,337	—	—	4,834	12,440	5,182	3,340	16,837		
TOTAL COST OF BUILDING — TOTAL	857,166	610,000	525,000	851,000	1,336,739	516,733	251,081	551,354	214,164	679,182	399,220	87,367	74,845	684,334	789,735	500,676	334,000	758,404	1,368,780	257,161	146,521	1,134,974		
TOTAL COST OF BUILDING — PER CU FT.	.428	.317	.311	.255	.41	.384	.332	.40	.44	.51	.44	.35	.35	.40	.42	.51	.75	.39	.36	.33	.40	.30		.382
TOTAL COST OF BUILDING — PER PATIENT	3,987.00	3370.70	3453.34	1702.00	3015.00	3445.00	1676.00	2720.00	3061.00	3800.00	1600.00	1027.85	—	1675.00	2254.60	—	—	1,863.40	4510.80	1,718.40	1,332.00	5153.00		
COST OF HEAT & VENTIL. — TOTAL	86,461	55,500	41,660	104,705	141,137	48,535	26,452		10,835	62,887	46,000	3,688	4,600	70,000	52,180	57,500	In Power Plant	63,125	157,000	20,611	5,000	115,989		
COST OF HEAT & VENTIL. — PER CU FT	.04	.029	.025	.031	.033	.036	.035		.018	.06	.05	.022	.022	.04	.028	.06		.032	.037	.026	.008	.031		.033
COST OF HEAT & VENTIL. — PER PATIENT	384.00	306.70	272.00	209.40	313.60	324.00	176.00		155.20	460.00	184.00	67.00	—	170.50	150.00	—	—	155.06	452.14	137.40	27.27	527.22		
COST OF ELECTRIC SYSTEM — TOTAL	26,399	15,920	12,962	31,729	27,632		9,594	3,000		26,886	7,600	1,700	2,300	8,700	43,501	6,800	1,100	14,366	20,875	9,000	2,200	19,384		
COST OF ELECTRIC SYSTEM — PER CU FT.	.012	.008	.007	.009	.006		.013	.002		.02	.008	.007	.011	.005	.024	.007	.002	.007	.006	.011	.009	.006		.009
COST OF ELECTRIC SYSTEM — PER PATIENT	111.00	88.00	85.00	63.46	61.40		63.90	14.30		149.00	34.00	20.00	—	21.22	141.30	—	—	35.30	68.72	60.00	29.09	90.85		
COST OF ELECTRIC SYSTEM — PER OUTLET	16.50		7.95		8.00		10.90			13.00														
COST OF ELECTRIC FIXTURES — TOTAL	7,971	3,250	5,000	9,772	10,000	3,575	2,180			6,561				3,640	9,750	1,744		4,000	6,823		2,540	5,936		
COST OF ELECTRIC FIXTURES — PER CU FT.	.003	.002	.003	.003	.002	.002	.003			.008				.002	.006	.002		.002	.002		.007	.002		.003
COST OF ELECTRIC FIXTURES — PER PATIENT	35.40	18.00	32.89	19.54	22.22	24.86	14.40			36.00			—	9.00	28.00	—		9.82	22.51		23.09	27.00		
COST OF ELECTRIC FIXTURES — PER FIXTURE	7.00		6.39		5.80		6.00			6.52														
COST OF PLUMBING SYSTEM — TOTAL	61,789	43,600	37,800	55,332	103,664	32,600	28,000			65,265	17,000	6,200	2,828	51,439	72,640	65,080	10,000	62,660	111,200	20,900	12,197	102,614		
COST OF PLUMBING SYSTEM — PER CU FT.	.029	.023	.022	.015	.026	.024	.03			.08	.019	.025	.012	.03	.04	.09	.018	.032	.03	.02	.036	.019		.029
COST OF PLUMBING SYSTEM — PER PATIENT	274.00	253.04	246.05	110.60	243.70	217.33	153.00			367.50	68.00	73.00	—	125.45	208.11	—	—	154.00	363.70	139.33	110.90	467.00		
COST OF PLUMBING SYSTEM — PER FIXTURE	226.40		143.70		165.65	150.00	136.00			253.00														
COST OF REFRIG. PLANT & Boxes — TOTAL	17,308	16,300	15,700	25,947	37,722		5,300		3,368	21,211		445			48,808	62,000		6,882	58,250	3,500		7,435		
COST OF REFRIG. PLANT & Boxes — PER CU FT.	.008	.008	.008	.008	.009		.007		.007	.01		.002			.021	.066		.003	.017	.004		.002		.012
COST OF REFRIG. PLANT & Boxes — PER PATIENT	77.00	89.92	90.13	51.88	83.82		35.50		48.10	118.00		6.21	—		124.50	—		17.01	192.24	23.33		33.80		
COST OF VAC. CL. SYSTEM — TOTAL	—	1,900	—	—	2,603				—	—			—	3,873	8,986	2,400	—	3,625		4,500		-		
COST OF VAC. CL. SYSTEM — PER CU.FT.	—	.001	—	—	.0006				—	—			—	.008	.005	.001	—	.002		.008				.0023
COST OF VAC. CL. SYSTEM — PER PATIENT	—	10.45	—	—	5.70				—	—			—	13.60	17.10	—	—	8.90		30.00				
COST OF ELEVATORS — TOTAL	22,225	11,200	3,360	22,473	32,280	16,315	2,450			16,100	6,000	1,113		6,280	18,000	8,000	1,500	7,625	16,500	9,000	2,700	5,855		
COST OF ELEVATORS — PER CU.FT.	.016	.006	.002	.007	.008	.012	.003			.013	.009	.003		.003	.01	.009	.003	.004	.008	.01	.008	.0016		.007
COST OF ELEVATORS — PER PATIENT	99.00	61.80	22.10	44.95	71.73	110.00	16.50			90.00	32.00	15.00	—	15.12	54.28	—	—	16.75	54.45	60.00	24.54	26.61		
COST OF LAUNDRY EQUIPMT — TOTAL	9,729	6,320	5,956	11,707	20,718	5,238	3,875	4,984	—	—			16,000			53,382	—					18,601		
COST OF LAUNDRY EQUIPMT — PER CU.FT.	.004	.003	.004	.003	.005	.004	.005	.004	—	—			.06			.021	—					.005		.017
COST OF LAUNDRY EQUIPMT — PER PATIENT	43.20	34.30	39.11	23.41	46.00	88.32	24.00	21.40	—	—			—			—	—					702.18		
COST OF KITCHEN EQUIPMT — TOTAL	3,239	6,475	4,000	—	18,802	4,118		3,000		6,300			—			—	—				2,500	9,000		
COST OF KITCHEN EQUIPMT — PER CU FT	.001	.003	.008	—	.003	.003		.006		.005			—			—	—				.007	.002		.0037
COST OF KITCHEN EQUIPMT — PER PATIENT	14.30	36.00	26.32	—	30.70	27.48		33.00		38.35			—			—	—				22.72	36.66		
COST OF POWER PLANT — TOTAL	15,000	7,400	7078	15,440	21,670		4,850	—	14,176				—		In Power Plant	—	161,800					66,000		
COST OF POWER PLANT — PER CU FT	.007	.004	.004	.005	.005		.006	—	.028				—			—	.302					.018		.047
COST OF POWER PLANT — PER PATIENT	66.66	40.90	46.50	30.88	47.90		30.00	—	202.50				—			—	—					300.00		
COST OF POWER PLANT — PER K W	75.00	50.00 ③	70.76	44.11 ③	38.86		75.00	—	141.00 ③				—			—								
PERCENTAGE CONTRACTS BEAR TO TOTAL COST OF BUILDING — BUILDING	72.2	73.4	75.2	67.1	74.76																			72.44
HEAT & VENT	9.6	8.1	7.9	12.3	8.1	9.4	10.2		5.0	12.0	11.8	6.9	6.1	10.2	6.6	11.5		8.4	10.0	6.0	2.0	10.2		7.2
ELECTRIC	2.9	2.6	2.5	3.7	1.8	.6	4.6	.6		4.0	2.0	2.0	3.5	1.3	6.02	1.8	.8	1.9	1.6	3.5	7.0	1.7		2.4
E. FIXTURES	.9	.8	.9	1.1	.6		.8			1.0				.6	1.9	.3		.5	.5		1.9	.4		.80
PLUMBING	6.9	7.5	7.1	6.3	6.4	6.3	9.2			9.6	4.6	7.0	3.4	7.8	5.5	16.0	5.0	8.5	6.9	8.0	8.0	9.0		7.6
REFRIG.	1.9	2.8	2.6	3.5	2.1		2.1		1.5	8.1			.8		5.8	12.5		.9	4.3	1.3		.6		2.9
VAC CLEAN	—	.3	—	—	.15				—	—			—		.8	.8	.4		.5		1.7			.80
ELEVATORS	2.5	1.8	.64	2.6	2.6	3.2	1.0			2.4	2.0	1.3	—		.9	2.5	1.6	.5	1.0	1.2	3.3	2.0	.3		1.76
LAUNDRY	1.1	1.0	1.1	1.4	1.4	1.2	1.4	.9	—	—			21.3			10.6							1.4		3.9
KITCHEN	.4	1.0	.76	—	.79	.8		1.6		1.1			—								2.0	.7		1.01
POWER PLANT	1.6	1.0	1.3	1.8	1.8		2.0	—	6.6 ④				—				41.0					6.0		2.8

① Provides capacity for several other buildings ② No power included ④ Large amount of piping involved

In many such plants the electric current is being made at a cost of one cent per K. W. H., and one of our largest New York hospitals made their electric current for ⅝c per K. W. H. In another of our New York hospitals an installation costing $17,000, and including electric power plant and refrigerating plant, resulted in a saving of $7,100 annually.

FIXED EQUIPMENT

In the determination of the nature and amount of fixed equipment required, the size and character of the hospital must be the determining factor, and this is a matter which must be considered from many standpoints. First, the needs of the hospital are to be regarded; second, the quality of workmanship, material and finish are most important, and third, the efficiency of the equipment should be carefully considered. A consideration of the size of the hospital with the number of its beds and the kind and amount of work to be accomplished in a given time will all be determining factors. From the standpoint of economy of maintenance and operation much depends upon the character of the installation of the apparatus, which must be the highest quality in every respect. The maintenance cost of cheap apparatus is so high, and the annoyance of frequent repairs, and interruptions of service, are so great that only the best apparatus may safely be used. Only such equipment should be selected as can be readily replaced in case of necessity. Much equipment is especially designed with a result that a great delay is experienced in purchasing repair parts when same become necessary. Standard equipment will in nearly every case answer the same purpose as specially constructed equipment.

The cooking, laundry and sterilizing requirements are generally understood. The elevator equipment also involves no specially difficult problem. In this connection, however, it is a common practice for the building committee and the architect to leave the matter very largely to

the elevator manufacturer, whose specifications are too often used with a result that the installation is elaborate and expensive. This matter should be left largely in the hands of the consulting engineer, for bids based on independently prepared plans and specifications will result in a complete equipment at the lowest cost.

Many hospitals are over-supplied with equipment, particularly in the laundry, largely due to the use of manufacturers' plans and specifications for this equipment. Frequently hospitals have laundry equipment much in excess of actual requirements, with some pieces of apparatus which are almost never used.

ate. Mention may be made of a device recently introduced consisting of a white enameled metal rack, which is designed for attachment to the bed or to the wall for holding all of the toilet necessities in a sanitary, neat and compact manner. This rack provides for the holding of the towel, wash cloth, hair brush, comb, tooth brush, drinking cup, etc., so that all of these can be placed in a space 7½ inches long by 5 inches wide.

COSTS

A great deal has been written concerning the cost of hospital buildings. Any statement of cost based upon the

COST DATA — TABLE Nº 2 — HOSPITAL BUILDINGS

BUILDING		1	2	3	4	5	6	7	8	9	10	11	12	13		AVERAGE COST PER CU FT
CUBITURE OF B'L'D'G		905,800	249,700	210,300	1,227,415	1,718,010	1,817,931	927,415	534,150	1,967,762	5,768,282	777,508	567,200	2,096,000		
COST OF CONSTRUCTN		320,620	72,221	49,320	441,682	541,214	540,539	274,050	213,900	594,131	1,016,132	190,250	120,384	647,045		
COST OF MECH EQUIPMT		78,600	15,146	25,625	237,500	145,540	249,256	276,826	174,100	164,275	550,648	67,511	26,137	250,121		
TOTAL COST OF B'L'D'G		399,220	87,367	74,945	679,182	686,754	789,795	500,876	394,000	758,406	1,566,780	257,761	146,521	897,166		
EXCAVATION	TOTAL	22,220	1,110	2,500	28,541	33,000	40,000	40,000	32,600	79,750	138,000	6,000	4,917	50,833		
	PER CU FT	.024	.004	.01	.025	.019	.021	.043	.063	.041	.036	.007	.013	.025		.026
MASONRY	TOTAL	111,700	25,216	23,420	175,303	260,950	196,760	91,050	105,900	249,147	417,095	71,650	53,654	222,878		
	PER CU FT	12	.10	.11	.132	.152	.105	.098	198	.127	.111	.092	146	.12		.124
STRUCTV'L STEEL & IRON	TOTAL	55,450	11,500	9,500	59,938	66,000	90,414	55,000	37,500	71,736	115,750	33,100	17,000	80,648		
	PER CU FT	06	05	.04	.045	038	.048	.038	.070	.036	.031	.043	.046	.04		045
CARPENTRY	TOTAL	20,400	7,400	6,500	46,348	53,500	60,000	22,000	5800	65,595	61,000	19,025	12,000	71,275		
	PER CU FT	022	.03	.03	.035	.032	.032	.024	.018	.033	.016	.024	.033	.035		.028
ROOFING	TOTAL	18,000	5,800	3,000	9,700	9,319	48,365	8,100	9,500	13,523	41,687	In Steel & Iron	8,367	23,080		
	PER CU FT	.02	.02	014	007	.005	.026	.009	.018	.007	011	—	.024	.011		010
GLASS & GLAZING	TOTAL	In Carpentry			In Carpentry	In Carpentry	In Carpentry		In Carpentry		36,000	1,000	400	6,202		
	PER CU FT	—			—	—	—		—		.0095	.001	.001	.003		0036
SKYLIGHTS & SHEET METAL	TOTAL	In Roofing			In Roofing	In Roofing	In Roofing		In Roofing	In Roofing	In Roofing	8,525	In Roofing	In Roofing		
	PER CU FT	—			—	—	—		—	—	—	.011	—	—		.011
PAINTING	TOTAL	5,000	1,095	950	In Carpentry	4,250	In Carpentry		In Carpentry	3,564	In Carpentry	In Carpentry	5,000	26,478		
	PER CU FT	005	005	004	—	.002	—		—	.002	—	—	.014	013		.006
LATHING & PLASTERING	TOTAL	10,000	2,660	1,750	16,500	22,800	20,000	6,000	400	20,225	37,500	15,000	10,060	41,237		
	PER CU FT	.01	017	008	.012	013	.011	.007	0008	.01	.01	009	.027	026		.0123
COMPOSITION FLOORING	TOTAL				13,103	20,000	14,000		5,000		29,000	3,750	In Masonry	8,106		
	PER CU FT				.01	.015	008		009		.008	002	—	.004		008
TILES MOSAICS & MARBLE	TOTAL	46,000	17,000	1,200		18,200	31,000	1500	800	41,260	65,600	11,000	2,886	63,029		
	PER CU FT.	05	.07	.006		.016	017	.0016	.0015	.021	0174	.014	008	.031		0211
HARDWARE	TOTAL	4,850	440	In Carpentry	In Carpentry	4,100	5,000	400	400	5,125	9,500	2,200	In Roofing	9,080		
	PER CU FT	005	.002	—	—	.002	.003	0004	0008	.0026	.025	.0028	—	.004		005
CAST IRON	TOTAL	27,000	In Steel & Iron	In Steel & Iron	30,000	49,095	35,000	20,000	21,500	44,210	35,000	19,000	5,500	44,189		
	PER CU FT	.03	—	—	.023	.023	019	.022	.04	022	009	.024	.015	022		022
BRONZE & BRASS WORK	TOTAL															
	PER CU FT															
TOTAL COST PER CU FT.		.44	.35	.35	.51	.40	.42	.51	.73	39	.36	.33	.40	.428		432

It is especially recommended that arrangements should be made so that every piece of apparatus in the laundry, or for that matter in any part of the hospital, can be removed without serious expense. It is desirable that large doors or windows from the laundry directly to the outside should be provided of such size that any unit of the laundry equipment may be hauled in or out of the building. This is usually considered in connection with the power plant, but is more often overlooked in the construction of the laundry.

A careful consideration of the many little details necessary for the complete equipment of the hospital will go far towards giving complete satisfaction in the working of the hospital. These details are too numerous to enumer-

cost per bed may be misleading to the trustees, superintendent and others. For instance, a hospital caring for a special class of patients requiring extra rooms and special equipment cost $4,000 per bed. If the same building had been planned as a general hospital beds could have been placed in the special extra rooms mentioned, thus increasing the bed capacity of the building to such an extent that the cost of the building would not have exceeded $3,000 per bed. This hospital has special employees for special purposes and rooms, but perhaps not as many as would be required to care for the extra number of patients which might have been accommodated in the special rooms, but even after making liberal allowances for these conditions it is found that this hospital would not have cost over

$3,300 per bed if used as a general hospital instead of $4,000 per bed as it actually cost, based upon the number of patients accommodated.

After making a careful study of this matter of costs the author has come to the conclusion that a better basis of determining the cost of the hospital building is the cost per cubic foot. In determining the number of cubic feet of the hospital, measurements should be taken from the basement or sub-basement (lowest) floor level to the mean of the outside of the roof, and from outside to outside of walls. In other words, the cubic feet of air displaced by the exterior dimensions of the building should be considered, eliminating approaches, ballustrades and other projections not enclosing space.

It is true that it is quite possible to be wasteful in space, so that the cubic feet of space per patient may also well be given consideration.

In table No. 1 are presented segregated costs of the construction of twenty-two hospitals and hospital buildings. In the case of hospital No. 22 the cost per patient is shown to be $5,159, which is very high, while the cost per cubic foot is shown to be 30 cents, and this is very low.

It has been stated that no hospital building should cost in excess of 30 cents per cubic foot, but it will be observed by reference to this table that rarely is a general hospital built at such a low cost. The fact of the matter is that local conditions, the character of the hospital and its work, and the elaborateness of the structure must all be carefully considered in determining the price per cubic foot. Eliminating No. 17 (which is a boiler house), the cost per cubic foot of all of the hospitals listed averages .382 cent. The cost of the heating and ventilating equipment per cubic foot averages .033 cent (after eliminating No. 9, which included no boiler plant).

The cost of the electric system averages 1 cent per cubic foot; electric fixtures average .003 cent per cubic foot; plumbing averages .029 cent per cubic foot (omitting No. 16, which is a laundry building); refrigerating plants average .012 cent per cubic foot; vacuum cleaner systems .002 cent per cubic foot; elevators .007 cent per cubic foot; laundry equipment (excluding Nos. 13 and 16, which are purely laundry buildings) .004 cent per cubic foot; kitchen equipment .004 cent per cubic foot; power plants average .005 cent per cubic foot. Thus the construction of the building (exclusive of its fixed equipment) averages .273 cent per cubic foot, as shown by this list.

Table No. 2 gives a segregated statement of the cost of hospital buildings exclusive of equipment, in the case of thirteen hospitals.

In the case of certain items, as masonry, the cost per cubic foot corresponds very closely in the case of practically all of the hospitals listed. It is the author's belief that every hospital building should have its cost analyzed and segregated in some such manner as that shown in tables one and two. By this means extravagance in any particular item of the work may be successfully avoided.

I wish to express my appreciation of the courtesy and cooperation of Mr. D. D. Kimball, Mr. A. M. Feldman, Messrs. York and Sawyer, Messrs. McKim, Mead & White, Mr. James U. Norris, Mr. Alexander Candlish, Doctor George O'Hanlon, Doctor Robert J. Wilson, Mr. Reuben O'Brien, Doctor Frederick Brush, and Doctor S. Wachsman in the preparation of the above mentioned cost data tables.

ORGANIZATION FOR INVESTIGATION

From time to time we learn of associations and authorities endeavoring to create a national investigating body or a central bureau for the purpose of making a comprehensive study of the subject of bettering the conditions of hospital institutions as a whole. A higher standard of efficiency would doubtless be obtained if such an organization existed, and it would better enable the authorities of the various hospitals and institutions to judge of their own defects and means of rectifying them. Some hospitals are aware of defects existing therein but take no steps to remedy them, while others are entirely oblivious as to the nature of troubles existing in their buildings.

In May, 1913, the Philadelphia County Medical Society appointed a committee to consider "ways and means by which the efficiency of hospitals in Philadelphia may be increased." An extensive study was made and the committee made three reports embodying the results of its study, together with an introduction on "The Principles of Hospital Efficiency" by the secretary of the committee. It is interesting to note that one of the most important findings of the committee was that no standards exist by which the efficiency of the hospital may be measured. The operating expense of one institution may be $3.00 a day for each patient and that of another a little over $1.00 per patient. The question naturally is raised as to whether the latter figure is a credit or a disgrace. It is pointed out that such a lack of standards is reflected in chaotic conditions. The committee stated that in 31 percent of the hospitals visited the records were so kept as to be useless for scientific purposes. Doubtless the conditions existing in this instance are very similar to those existing generally, so that there exists a most fruitful field for an elaborate and scientific investigation of hospital problems.

Whether such an investigation should be undertaken under the auspices of special interests by the government or by an association of hospital authorities may well be given the most careful consideration.

When we consider that there are nearly 7,000 hospitals in the country and that 9¾ percent of the entire population of the country annually receive hospital treatment we begin to realize the enormous amount of institutional work involved.

Discussion on Mr. Bartine's Paper on the Building of the Hospital

BY D. D. KIMBALL,

Before the Seventeenth Annual Conference of the American Hospital Association, San Francisco, June 22-25, 1915.

Mr. Bartine's paper is the happiest possible combination of new suggestions and warranted warnings. A careful study of the article by every hospital building committee would result in a material improvement in the construction of new hospitals.

Especially to be commended is the advocacy of the employment of the thoroughly experienced architect, engineer and builder. It would scarcely seem necessary that the architect, engineer or builder should confine his practice to hospital buildings, for a general experience in other lines of work will bring to the hospital work much valuable information; but only those who have "gone through the mill" can appreciate the character and variety of the multitudinous problems peculiar to hospital building and the extent to which experience with these problems is valuable. The selection of the architect and engineer is so vitally important to the success of the hospital that no consideration of nepotism or friendship should govern the choice. The layman can hardly hope to visualize a building from the plans, as this requires a degree of experience not to be expected in those not engaged in some way in the erection of buildings. An ill advised selection of the architect and engineer will become evident to those responsible for the appointment only when the building

has assumed concrete form and its larger defects have become irremediable. If these defects happen to be of such nature that the hospital loses a possible economy in operation or facility of administration, a permanent extra expense will be involved. It is beyond imagination that one who has designed a dozen or fifty hospitals, or who has designed the equipment for them, or who has built these buildings, should fail to gather experience and information of the greatest value to the new hospital. Is it to be wondered that a hospital building built by architect, engineer and builder without previous experience in hospital planning, equipment and construction should fall far short of the highest ideals? And yet new institutions are constantly being built under such conditions.

Added emphasis might be laid upon the importance of seeking freedom from all nuisances, emphasis warranted by conditions actually existing in some cases. Proximity with industrial plants must always be avoided; otherwise annoyance will result from noise, smoke and odors. The location should always be remote from power, gas or rendering plants. The possible future development of the surrounding property along industrial lines may well be studied.

Concerning foundations, the number of test holes or drillings should be such that complete information concerning the character of the soil under the entire building should be at hand. The contour of the rock is sometimes very uneven. Two instances may be recalled in which rock was encountered at grade at one portion of the building, and was more than thirty-five feet below grade at other points under the building.

That the extent and efficiency of the mechanical equipment should not be sacrificed for the ornamentation of the building, or for the increase of its size, apparently needs no argument. Nevertheless many instances can be cited where this has occurred. Often this is due to the attitude of the architect, whose interest in the appearance of the building externally and internally exceeds his realization of the importance of the equipment.

The facts relating to the isolated electric power plant are well stated. This subject is further discussed by the writer in a paper to be read at another session of this meeting.

Reference is made to the importance of preventing changes in materials from those specified. Are such changes urged by the contractor for the benefit of the building? Are they not almost invariably urged for the benefit of the contractor's pocket?

The price for the work which the owner pays to the contractor includes the cost of the materials specified. The builder contracts to furnish these particular materials. Why then should the owner pay for one material and be asked to accept another? If the contractor were required to rebate the full difference in cost between the materials specified and those he proposes to furnish he would promptly lose his interest in the substitution. This is a serious evil which should be curbed. It operates not alone to the harm of the owner but to the disadvantage of the best contractors.

Mr. Bartine has well stated the problem of concealed piping. It is to be noted that he gives as 4 to 5 inches the depth of the floor fill where pipes must be concealed. Certainly 5 inches is desirable in every case where pipes must be placed between the concrete floor slab and the finished floor. All of this space is necessary for the installation of heating and plumbing pipes and electric conduits. It is not alone a question of the space required by the size of the pipe; but the steam pipe must be covered with asbestos, it must be protected from the concrete by sheet metal arches, it must be given proper pitch for drainage and it must have freedom for expansion and contraction. Often one pipe must cross another or an electric conduit. No consideration of a slight extra expense for an extra inch or two of floor fill should be allowed to endanger the successful installation and operation of the piping system.

Concerning ventilation I would like to add to what Mr. Bartine has said something suggested to me by Dr. Miller's admirable paper on "Hospital Ventilation From the Point of View of the Clinician," read in the Section on Hospitals A. M. A. a year ago. In the system of artificial ventilation generally applied to the hospital the trunk ducts system has been commonly used. Thus every room is served with air of the same temperature. In few cases the individual duct system has been used in hospital work, but in school building ventilation it is now being very generally used.

In the individual duct system a separate duct is carried from the fan or plenum chamber directly to the base of the vertical flue which rises to each room. The plenum chamber is divided into upper and lower parts, the temperature of the air passing through the upper chamber being slightly higher than that required for the ventilation of the rooms, and the temperature of the air in the lower chamber being approximately twenty degrees less. Connections are made from both of these chambers to the individual ducts with mixing dampers in each connection automatically controlled by a thermostat located in the room served. In addition volume dampers are installed in each duct to regulate the volume of air supplied to each room. Every mixing damper and every volume damper is placed directly at the plenum chamber, making for ease of adjustment and manipulation and assuring better attention on the part of the janitor. Such an arrangement has the merit of being easily intelligible to the janitor.

The chief advantage of this system, however, lies in the fact that exactly the required volume of air at the exact temperature demanded by any and every individual room may be had, as required.

One or two sides of a building may be subjected to the warming effect of the sun, while the other sides of the building may be subjected to a severe cold wind. Under such conditions the rooms subjected to the cold wind and shade may require an air supply at a temperature as much as ten degrees higher than the rooms on the warm, sunny side.

The installation of the individual duct system increases the cost of the ventilating system by 2½ percent in large buildings and 5 percent in small buildings; but inasmuch as the individual system is decidedly superior to any other system because it makes it possible to meet every varied demand in the different rooms, it is certainly well worth its cost. This system has little or no effect on the operating cost of the plant.

Many of the results credited to the individual duct system can be obtained by the use of the double duct system, but with a very slight saving in cost of installation and with the serious objection that it involves a more complicated system of duct work with mixing and volume dampers scattered all over the building. In many cases these dampers are necessarily placed in inaccessible positions; thus they are hard to get at and their location is often forgotten and more often neglected. For these reasons the system is much more difficult to maintain in an efficient condition, and the results obtained are correspondingly less satisfactory.

May I suggest also that the installation of a number of small fan units is much preferable to the use of a less

number of large fans? The installation and operation of the smaller units involve less complication in design and operation; a small system is always more easily understood by the janitor, and a number of small plants rather than a single large plant will always be found a more flexible and satisfactory arrangement. Usually a sufficient saving in the cost of duct work is made to offset the slightly increased cost of a number of small units over the cost of a less number of large units. The use of small units permits of their distribution about the building in such a way as to involve less interference with the building construction and use of the basement.

From the standpoint of the engineer the method of operating room lighting proposed by Mr. Bartine is to be commended, for by such means the best illumination may be had at a reasonable cost and all the objections made to other methods of operating room illumination seem to be met.

To complete the clear presentation of the case of the electric generating plant it is only necessary to state that the slight extra steam pressure required for the operation of the engine involves no additional hazard, nor is the expense of generating steam at the higher pressure greater. Instances where such plants generate electric current at or near one cent per kilowatt hour are numerous.

Naturally the consulting engineer will agree with Mr. Bartine's statement concerning the use of manufacturer's specifications for equipment. And this is so because he sees more of the resulting misfits and extravagances resulting therefrom. But another source of evil in this connection is the occasional desire of laundry and kitchen heads for more apparatus or more elaborate and expensive apparatus than the size of the hospital warrants.

To emphasize the reference to openings for laundry and other mechanical apparatus may I instance a case coming under my personal observation recently? At a new hospital, costing three-quarters of a million dollars and not yet occupied, a large section of the laundry building wall had to be cut out in order to get the washers and mangles into the building.

No more enlightening table of costs than Mr. Bartine's has been presented. The adoption of the suggestion that the cost of every future building be so divided and analyzed would result in unexpected benefits. Possibly a further classification of the average costs might be made to advantage. By knowing the nature of the equipment in these different buildings and the different purposes served by the buildings it should be possible to determine a fair cost per cubic foot, as, for instance, the cost of a certain class of ventilation in a certain class of hospital. The writer has carried out such a plan in connection with school building ventilation with considerable success.

The Mechanical Equipment of Hospitals[1]

BY D. D. KIMBALL,

President of the American Society of Heating and Ventilating Engineers; Member New York State Commission on Ventilation.

The mechanical equipment of the hospital is one of its most important features, for upon the success or failure of the mechanical equipment largely depends the comfort of the occupants, convenience of the staff, and the general efficiency of the hospital. Moreover, the expense of operating and maintaining the mechanical equipment is usually one of the largest, if not the largest, single item in the cost of the conduct of the hospital.

A consideration of this most important phase of the hospital building will be attempted. The most important element thereof is the heating and ventilating plant. Reference will first be made to ventilation, and an effort will be made to review briefly the results of the last three years of study and investigation of the ventilation problem.

In a paper presented before the Fifteenth International Congress on Hygiene and Demography[2] the writer classified the different phases of the problem substantially as follows:

First, problems of chemistry, including:

(a) Chemical composition of air; with special reference to oxygen, carbon dioxide, ozone; and elements of the air to which but little thought is now given.
(b) Organic matter; that is, that due to exhalations and body excretions.

Second, problems of air conditioning:

(c) Dust.
(d) Humidity.
(e) Temperature; optimum; effect of high, low, and varying.

Third, relating more especially to the mechanics of ventilation:

(f) Air volume, for different classes of people as affected by different systems of ventilation or different degrees of diffusion.
(g) Air movements; currents, drafts and breezes.
(h) Heating of air; is it injured by heating?
(i) Cooling.
(j) Recirculation.

And fourth, certain incidental problems:

(k) Natural versus artificial ventilation.
(l) Relation of ventilation to rest, sleep, normal activity, and violent exercise, and ventilation as affected by age, sex, climate, and different conditions of health.
(m) Methods of determining the effect of ventilation and its elements upon the individual and upon masses of people.
(n) Efficiency of installation and operation.

We will consider briefly the present viewpoint on each of the above.

It is generally agreed that the oxygen content of the air is not lessened, nor the CO_2 content increased in an occupied apartment sufficiently to enter into consideration in the problem of ventilation. Nevertheless, experiments of the New York State Commission on Ventilation show a decided increase in appetite on the part of the subjects in fresh air as compared with their appetite in stagnant air of the same temperature and humidity, even though the stagnant air is kept in motion; whereas the appetite does not appear to be affected by the introduction of CO_2 in the air supply to the extent of over 50 parts in 10,000 parts of air in the experimental chamber.

In connection with the subject of the chemistry of the air may be quoted the final conclusion of the report of the first year's work of the New York State Commission on Ventilation, as follows:

"The chemical changes in the breathed air of occupied rooms are of comparatively minor importance, but the substances present in such air appear to exert one definite measurable effect, a decrease in the appetite for food, an observation which for the first time offers scientific evidence in favor of fresh air as compared with stagnant air of the same temperature and humidity."

Recent experiment emphasizes the conclusion above stated. Inasmuch as oxygen is the active agent of the processes of oxidization which go on in the body, is it not possible that even the slight diminution of oxygen occurring in the occupied apartment has a direct effect on the extent of oxidization within the body? Or shall we credit the results of these experiments, several times repeated, to spooks?

[1]Read before the Seventeenth Annual Conference of the American Hospital Association, San Francisco, June 22-25, 1915.

[2]Washington, D. C., September 22-28, 1912.

Certainly CO_2 requires no further study. Its only significance lies in its value as an indication of the extent of the fresh air supply and its diffusion.

Ozone is not now considered a factor in ordinary ventilation. Doctors Jordan, Carlson and Sawyer[3] and others have shown that it has no value as a bacteriacidal agent within such concentrations as are not harmful to people.

Professor Czaplewski[4] states:

"As regards the air-purifying properties claimed for the gas: (a) We need not count on a destruction of bacteria in the air by ozone, nor their destruction on the walls of rooms, nor on objects in the room. (b) There is no oxidation of the organic dust particles. (c) There is, however, a positive effect on certain scents and the odors given off by the same.

"In ozonization of air we must differentiate between (a) ventilation with ozonized fresh air (best central ventilation); (b) ozonization of enclosed room air. The former is preferable without question, and is the only one that need be considered in the development of the ozone ventilator problem. Ozonization of room air is often only a makeshift of dubious value. Tests with ozonization of room air allow no very valid conclusions which might be applied to the ventilation of rooms using ozonized fresh air."

In general it has been used in concentrations of one part in two to four million. Recently the suggestion has been offered that it might have value if used in concentrations of one part to ten million. No entirely convenient means has been suggested for determining the degree of concentration in field work.

As to organic matter of a toxic nature in the air of an occupied apartment, the result of recent experiments and authoritative opinion seems clear that no such matter exists. Weisman[5] has ably presented the facts relating to this much debated subject and reaches what appears to be the justified opinion that "so far as danger to health from any effects of poor ventilation is concerned, the presence of sensitizing material in the breath is not a factor to which such ill effects may be attributed."

Odors may be said to be of no physiological importance, but nevertheless our sense of common decency dictates that our occupied apartments should be free therefrom, and this may best be accomplished by fresh air supply. To what extent or in what manner disagreeable odors may have a reflex action on our physical and mental condition is not now known. It may be altogether psychological, but even though this be so and the effects of odors are not physiologically harmful, they may be annoying or disturbing enough to sensitive people to warrant the use of all possible means for their elimination. The report of the first year's work of the New York State Commission on Ventilation, in conclusion 7, suggested that possibly the reduction in the appetite of the subjects in stagnant air might be due to the subconscious effect of odors. This possibility is now being experimentally investigated.

Dust as it ordinarily exists in the occupied apartment may not be considered seriously harmful. In general its bacteria-bearing proclivities go the way of the theory of areal infection. Nevertheless our desire for ordinary cleanliness will bring about the elimination of the dust nuisance to the greatest possible extent, and in no place with such care as in the hospital, for here the last degree of danger of germ-laden dust must be removed. Especially is this so because of the lowered vitality of the hospital patient.

The following by Prof. Winslow[6] is in accordance with the generally accepted view of the dust problem:

"We have a reasonably good basis for the conclusion that a count in the neighborhood of 100 microbes per cubic foot is entirely normal for city air, and the results reported in regard to the proportion of mouth streptococci found do not lend any weight to the belief that such air can play any part in the transmission of microbic disease. For dust particles comparatively few determinations have been reported by methods at all comparable with ours. Here, too, however, there seems no reason to conclude that a dust count of half a million to a million particles (visible under the ⅔-inch objective) indicates anything more than a normal and innocuous condition."

Many of the trade dusts constitute a really serious menace to the health of the workers, especially the hard, sharp metallic, stone and similar dusts. No phase of ventilation is of greater importance than the elimination of trade dusts by suitable mechanical exhaust systems. Many of the states have passed laws requiring such ventilation.

Concerning humidity a writer in a late issue of THE MODERN HOSPITAL makes the statement that "We must have humidity, and the amount has not been settled." In support of the first part of this statement and in apparent refutation of the second part, there might be quoted a few of the many authorities who determine the desirable degree of humidification to be substantially as follows:

Wolpert[7]	40-60%	Riepzchel[14]	30-40%
Oesperlen[8]	40-60%	Richardson[15]	40-60%
Scherer[9]	30-60%	Shaw[16]	50%
Paul[10]	40-60%	Shepherd[17]	30-55%
Rietschel[11]	40-60%	Brefflar[18]	40-50%
Smith[12]	50-60%	Evans	60%
Rubner[13]	30-60%		

In the practice of artificial humidification 30 per cent has been regarded as the minimum and 50 per cent the maximum for which provision must be made. The lower humidity is that provided for extreme cold weather because there exists no reason for believing that this is insufficient, because artificial humidification is expensive, and incidentally the lower humidity in cold weather prevents frosting of windows.

In explanation of the statement that humidification is expensive it may be explained that over one-half horsepower of boiler capacity, burning approximately three pounds of coal each hour, is required to humidify to 30 per cent each thousand cubic feet of air supplied per minute in zero weather. And this is about four times the boiler capacity and fuel saved by a reduction of ten degrees in air temperature.

Professor Winslow,[19] in referring to Miss Alice L. Lake's investigation of temperature and humidity conditions in six New York hospitals, makes the following observation:

"The air of the hospitals was very dry, irrespective of the method of ventilation, sixty-three out of seventy-five records being below 40 per cent of saturation. In the operating rooms the temperature, of course, was very high (in six cases out of twelve, over 74° F.) and the humidity correspondingly low (in five out of twelve cases, 30 per cent or below, in none over 40 per cent). It seems to me a serious question whether such dry air may not promote harmful evaporation from the exposed body cavity. Artificial humidification would not only lessen evaporation, but would diminish the cooling effect and so make it possible to avoid the extremely high temperatures now generally considered necessary."

There seems to be an almost complete unanimity con-

[3]The Journal of The Am. Med. Ass'n. Part 1, Vol. LXI, pp. 1007-1015.
[4]Metallurgical and Chemical Engineering, April, 1914.
[5]Biochemical Studies of Expired Air in Relation to Ventilation, Charles Weisman, M. S., 1913.
[6]Prof. C. E. A. Winslow, School Ventilation in New York City, Am. Jour. Pub. Health, Vol. 3, No. 2.
[7]Prinncipien Der Ventilation and Lustheilvung, 1860.
[8]Handbuch Der Hygiene, 1876.
[9]Aphprisnen Uber Herzung und Ventilation Der Schulhauser, 1881.
[10]Lehm Buch Der Herz und Lustungstechnick, 1885.
[11]Lustung und Herzung Von Schulen, 1886.
[12]Indoor Humidity, Am. Gas Light Journal, 1905.
[13]Archive Für Hygiene, Vol. XI.
[14]On air vitiation, 1910.
[15]Conservation by Sanitation.
[16]School Hygiene, 1908.
[17]Heating and Ventilating Magazine, December, 1913.
[18]School Hygiene, 1908.
[19]The Importance of Studying the Actual Conditions of Hospital [illegible] American Medical Association, Nov. 7, 1914.

cerning the desirability of humidification. And yet there is not available an iota of scientific or exact data justifying the demand for artificial humidification, or proving that dry air is harmful in any way. Data concerning this important subject is most desirable. The next year's work of the Ventilation Commission will be directed largely along this line.

The bad effects of high temperatures, especially when combined with high humidity, are well known. The experiments of the Ventilation Commission showed a reduction of work voluntarily done of 37 per cent at 86 degrees and 15 per cent at 75 degrees, as compared with 68 degrees, all tests being made with 50 per cent relative humidity. These tests also gave positive indications of disturbances in the regulating and circulatory systems of the body.

Nothing has been offered indicating the desirability of temperatures lower than 68 degrees for normal beings at rest. Occasional lower temperatures, or a variation of temperature, in hospital work are advocated by many doctors, but scientific data concerning the value thereof are desirable.

The volumetric standards of air supply heretofore in use in ventilation work find a new basis in the new conception of ventilation, i. e., that it is the province of ventilation to remove the heat and moisture produced by the occupants of the room to be ventilated. To illustrate: 30 cubic feet of air per minute per occupant has heretofore been considered the amount of air required to be supplied to maintain a certain standard of purity of air in the occupied room. It is this amount of air which is required to remove the heat and moisture given off by one person when introducing the air into the room at ten degrees less than the room temperature, which is about as low as is possible without causing drafts or a chilling of the occupants. To what extent this may be affected by different degrees of air diffusion, by different systems of ventilation, or by the conditions of the occupants of the room is not yet determined.

Air movement is now regarded as a most important element of ventilation. Stagnant areas in an occupied room mean heat and moisture accumulations to an uncomfortable degree. The well known experiments of Dr. Leonard Hill[20] and his associates have conclusively proven that air motion may go far towards preventing heat retention in the body and promote comfort in an atmosphere of high temperature. Without air movement the heat and moisture of the body will form a hot, moist so-called "areal envelope," producing all of the discomforts of a room of high temperature and humidity. But that this air movement should be produced by currents of fresh air is an assertion which seems warranted by the results of the appetite experiments of the Ventilation Commission above referred to.

There is a constantly lessening dread of drafts. Many of the diseases formerly believed to have their origin therein are not now so regarded. There is also a growing appreciation of the value of room perflation.

Occasionally the statement is made that air is robbed of its freshness when heated, or is in some mysterious way devitalized. Not a shred of evidence exists to support this contention as applied to a modern ventilating system. If it were so no defense of the direct radiator in the patient's room in the hospital could be made, for the temperature therein is exactly the same as the temperature within the blast coils of the indirect or fan ventilating system. But there is believed to be no possibility of ill effect to the air in either case and both have their place.

[20]Publication 2170, Smithsonian Institute, 1913.

Reasonable objections might be offered to the excessive air temperatures which were in some cases formerly used in blast or furnace systems of heating. The air from the modern ventilating system is usually introduced into the room at approximately room temperature and never at over one hundred degrees even in systems having no direct radiators, nor does it ever come in contact with heating surfaces of a temperature of over 215 degrees to 225 degrees. At no time has it been possible, however, to find in steam heating systems air temperature up to 400 degrees, as has been asserted, for this temperature is equivalent to a steam pressure of three hundred pounds per square inch. In defective furnace systems (and furnace systems are not now used in hospitals) or in the case of air heavily laden with dust coming into contact with high temperature surfaces (for which there is no excuse) it is possible that the air may be injured in its passage through the heaters by the absorption of gas from the furnace or by the distillation of carbon monoxide from the dust in the air.[21]

But little artificial cooling work has been attempted, and the advantages obtained therefrom have not been clearly established. The proven ill effects of high temperatures lend the subject of artificial cooling added importance. A very limited amount of artificial cooling work has been attempted in banks,[22] residences and hospitals.

The cost of artificial cooling is very high. In the matter of installation approximately seven tons of refrigeration capacity is required for each ten thousand cubic feet of air per minute supplied by the ventilating plant, but if the plant is especially designed for cooling purposes the amount of air used may be somewhat less than that usually supplied for ventilating in winter.

The best method of cooling is by the means of a ventilating plant containing an air washer, the water circulated therein being cooled by a refrigerating plant. If the hospital plant is large and is to, or does, include an absorption type of refrigerating plant, so that the operating force is not necessarily increased, the operating expense of the air cooling plant is small, being limited practically to the expense of the water used by the refrigerating plant (much of which may be saved and used again, for other purposes in the hospital), and oil, waste and repairs. Where a compression type of refrigerating plant is used the expense for cooling becomes much greater, the cost of cooling 10 degrees being about equal to that of heating to 70 degrees in zero weather.

Further experimentation with recirculated air has been reported during the last year by Professor Bass in Minneapolis,[23] and by Dr. McCurdy at the International Y. M. C. A. College Gymnasium, in Springfield, Mass.[24] The former, with reduced air volumes but with individual air supply, experienced difficulty with odors which the use of an air washer did not eliminate. The use of ozone had previously overcome this difficulty. Much larger volumes of air than are customarily employed were used by Dr. McCurdy, and by the use of the air washer freedom from odors was secured. A large theater in Boston was ventilated throughout the last winter with recirculated air passing through an air washer, with entire satisfaction and a marked economy in fuel.

A preliminary experiment in the use of recirculated air by the Ventilation Commission has met with difficulties

[21]Dust in Relation to Heating, Conrad Meier, Trans. Am. Soc. Heating and Ventilating Engineers, 1912.

[22]Ventilating, Heating and Cooling Plant in a Bank Building, A. M. Feldman, Tran. Am. Soc. H. and V. Engineers, 1909.

[23]Experiments in School Room Ventilation with Reduced Air Supply Through Individual Ducts, Frederick Bass, Tran. Am. Soc. H. and V. Engineers, 1913.

[24]National Physical Educational Review, 1914.

from odors. Further experiments along this line are to be carried on to determine the efficiency of recirculation as a method of ventilation, the possibility of eliminating odors and the relative economy of operation. For the present no recommendation favoring recirculation may be made.

Natural, or window, ventilation is receiving more endorsement than ever, but as yet no scientific data are offered to prove that it is equal or superior to artificial ventilation. It has been especially urged for schools and hospitals.

The following is quoted from a paper by the author on "The Heating and Ventilation of School Buildings":[25]

"Usually a small class is the subject of this experiment, the class being conducted by specially selected and enthusiastic teachers; the students are given short lesson periods, ample rest periods, sleep periods and exercise periods. They are given special medical attention. Their physical welfare and mode of living are more or less subject to the care of nurses, their homes are visited to see that the best possible conditions are provided therein for the children, they are provided with medicines and furnished with special lunches. With all these helps it would be strange indeed if the physical and mental progress of these children were not remarkable. But is there any assurance therein that the progress made is due solely to fresh air, or that similar results could not be obtained in closed rooms properly ventilated?

"Experiments recently made seem to indicate that the elimination of the special diet alone lessens the results obtained in the open-air schoolrooms. What the results might be with the elimination of one or more of the other special features is not known. Whether similar results can be obtained in a closed room with a similar regime is not known.

"Manifestly a breeze can produce an air current through the windows upon but one or two sides of a building. The rooms on the other two or three sides of the building must fail to receive the proper air supply.

"It should be easier to secure proper results by selecting one capable engineer to operate a well designed and well installed system than by placing dependence upon a large number of people who have many other duties to perform and who know little of either the importance or method of operating the windows or plant to secure the best room conditions."

The following quotation is taken from Dr. James Alexander Miller's admirable paper on "Hospital Ventilation from the Point of View of the Clinician":[26]

"What, after all, is this open air on which we insist so strongly? Is it anything but the atmosphere with varying degrees of temperature, moisture and pressure in varying degrees of motion, together with certain impurities, chemical, bacterial or dust?

"Dust and bacteria in excess are always to be avoided, and certain varieties are harmful even in small amounts. In the open air as such can we adequately control these factors, and if we could, do we know just the ideal combination we would have?

"The outside air may be cold when our patients need it warm, it may be dry when they need it moist and vice versa, and, moreover, the dust problems of open windows cannot be overlooked.

"For years ventilating engineers have been asking us what condition of air we want, and we have no reply but 'fresh air.' This evidently may mean any variety of that very changeable article. It may well be that open windows are better than artificial systems, but we cannot say so definitely until we can state just what we are trying to accomplish. When this is stated the problem becomes one of engineering and economics.

"By open window ventilation are we not apt to get too much air for some patients and too little for others? Can we regulate the problem of drafts near the window and pockets of stagnant air in the corners?

"Then again it is evident that open window ventilation can never be automatically regulated. In wards this regulation would naturally devolve on the nurses, although the physicians should of course supervise it. With the multitude of other duties can we trust physicians and nurses systematically to employ the care and intelligence necessary?

"Certain it is, however, that even now the artificial system alone seems insufficient and that periodic flushing of wards with air from open windows seems reasonable and necessary. But on the other hand, it seems probable that open windows alone will be unsatisfactory.

"That the open air with all its variations when directly admitted to the wards may by no means always prove of just the desired condition and that its proper distribution to all points of the ward may be most difficult seems very probable. It would appear, therefore, that at present a combination of these two so-called systems is desirable, especially when we remember that in winter a heating system is always necessary and that ventilation is a natural corollary of the heating problem."

But little scientific data exist concerning the relation of ventilation to other than normal conditions of health. Reference is made to some phases thereof in Dr. Miller's paper above mentioned, under whose direction further studies are to be made by the Ventilation Commission. When the general problems of ventilation have been solved the solution of the allied problems will consist of modifications of general principles only.

To arrive at satisfactory methods of determining the effect of ventilation and its various elements is in itself a complicated problem, whether for experimental or practical purposes. The methods used by the Ventilation Commission in its laboratory work have already been reported upon.[27] The methods to be used in field work will be reported later.

A discussion of the efficiency of installation and operation of ventilating plants will be coupled with a similar discussion relating to the complete hospital plant at the conclusion of this paper.

The writer in THE MODERN HOSPITAL above referred to observes that the art or science of the engineer will not go far toward the solution of some of these ventilation problems. Granted, but only by the cooperation of the medical man, the laboratory expert, the psychologist, the engineer and all others interested will the most rapid progress be made, for the problem is a most complex one.

The New York State Commission on Ventilation, which has spent two years in investigation and experimentation, and has planned two years' further study, was made possible by two generous gifts from Mrs. Elizabeth Milbank Anderson through the New York Association for Improving the Condition of the Poor.

The members of the Commission, who serve without pay, include Prof. C. E. A. Winslow, formerly of the College of the City of New York, and now Professor of Public Hygiene, Yale University, chairman; Prof. F. S. Lee, Professor of Physiology in Columbia University; Prof. E. B. Phelps, Chemist of the U. S. Hygienic Laboratory; Dr. J. A. Miller, of the Bellevue Medical School and Hospital; Prof. E. L. Thorndike, Professor of Psychology in Teachers' College, and the author, Consulting Engineer. The Commission was organized in June, 1913, formulated its plans at once and began actual experimental work about December, 1913.

Much may be justly expected to result from the work of this Commission, for it is the first and only time that adequate funds have been available to study properly this baffling problem.

As stated by Dr. Miller, the problems of ventilation become purely those of engineering and economics when standards are but agreed upon. Then, as now, the mechanical equipment of the hospital will include the following

[25]The Heating and Ventilation of School Buildings, Am. School Board Journal, 1914.

[26]Journal of the Am. Medical Association, Nov. 7, 1914.

[27]Results of the First Year's Work of the New York State Commission on Ventilation, Am. Jour. of Public Health, February, 1915.

features, all but the last three or four being essential to every hospital:

Heating.
Ventilation.
Kitchen equipment.
Laundry equipment.
Sterilizing equipment.
Special warming devices.
Plumbing, including cold, hot, and sometimes cooled, water systems.
Fire protection service.
Electric system, including lighting, motors, heating devices, call system, telephones, clock systems (time and watchman), x-ray, electric baths, and special electrical equipments.
Incinerator.
Refrigerating plant.
Vacuum cleaning plant.
Electric power plant.

Manifestly a detailed discussion of all of the above may not be undertaken within the limitations of this paper. General and important principles will be given, as viewed by the author.

Steam heating versus hot water heating is still discussed. Undoubtedly in the days when only the old gravity steam heating system was available the hot water system was more satisfactory, and possibly more economical. Few, if indeed any, engineers of experience and free of manufacturing or contracting interests will assert that a hot water system, gravity or forced circulation, is the equal in low cost of installation, economy and convenience of operation, or otherwise with the modern vacuum steam heating system with its graduated control of steam to the radiators. It may be safely stated that not five per cent of the larger buildings now being built are heated by hot water systems, and the proportion would be less except for the advocacy of the hot water system by manufacturers and contractors having patented systems or devices for forced hot water systems, and except for the further fact that there exists an ill-founded prejudice on the part of some people in favor of the hot water system.

The hot water system is subject to the danger of freezing, is slow in heating and cooling off (the forced system being less objectionable in this respect), and it involves the risk of serious damage in the case of a break in the piping, as well as possibly a serious waste of water.

Air valves (always a nuisance) are eliminated only in the vacuum steam heating system. The claim advanced that a modulation of water temperature with the outside temperature may be had with the hot water system is less real and of less importance than represented. This advantage may be approximated in the vacuum steam system, and with a material reduction in installation and operation costs. The installation cost of the best vacuum steam system will not equal the cost of a forced hot water system. And, the general impression to the contrary notwithstanding, the latter system is the more complicated.

It is a misfortune that advantage has been taken of the success and popularity of the vacuum and graduating heating systems by some manufacturers who have foisted upon the public many inefficient and cheap graduating, float and thermostatic valves which have, in many cases, brought discredit upon the vacuum heating system.

These valves are subjected to severe service and to give satisfactory service they must be heavy in every part and be constructed according to certain essential principles. In the case of the graduating supply valve for hospital work it should be so constructed that its interior may be removed without disconnection of the valve from the radiator or piping, for which purpose it should contain an auxiliary stop valve. Thus the valve or radiator may be repaired without affecting any other unit in the system.

The float valve of the best make was very satisfactory, but many of them would, under certain conditions, become noisy. The thermostatic radiator return valves (of perhaps three or four of the best makes) are most satisfactory, being more efficient, durable and noiseless. These valves should be heavy in every part, require no strainer, the valve therein should close against the return pipe connection and not against the radiator connection, and the valve should have a vertical movement of not appreciably less than one-quarter of an inch from the seat when full open. A less movement will result in holding water in the radiator much of the time.

Direct radiation is generally advocated and used throughout the hospital building, with the possible exception of the operating room in the larger hospitals, where there is little or no objection to the operation of a mechanical plant throughout the heating season. The direct radiators should be of the hospital type, having a perfectly smooth surface, with sections spaced three inches on centers so that they may be readily cleaned. The radiators should be supported from the wall by means of heavy brackets, there being a space of not less than 3 inches, and preferably 4 inches, from the wall to the radiator, and 5 inches from the bottom of the radiator to the floor. In such an installation the floor is left entirely free and dirt-collecting areas do not exist.

One of the largest hospitals recently built in the East has been equipped with the regular pattern radiators, with legs resting on the floor and branches thereto run on the floor, the radiators being set close to the wall, so that cleaning the floor under and about the radiators and the wall back of the radiators or the radiators themselves is almost an impossibility.

The plan sometimes adopted of placing the radiators in enclosures under the windows is not to be recommended. While admitting that the radiators are not easily kept clean, it is contended that the plan of concealment of the radiators offers no improvement in this respect, inasmuch as the enclosure invariably becomes foul and cannot easily be kept clean.

The type of boiler to be used in a hospital plant is entirely dependent upon the size of the institution and the space available. Too often in small hospitals use is made of the sectional cast iron boilers for heating, with an auxiliary high pressure boiler, sometimes referred to as a steam generator, to provide steam for sterilizing and laundry purposes. Such an arrangement is not to be commended, for it results in the operation of two or more fires at all times and one fire might be sufficient for all purposes for the most of the year. Also, the small sectional boilers are not economical in operation. This arrangement results in a complication of piping and equipment. The object of this plan is usually to eliminate the need of a high grade engineer, in the belief that a janitor can operate the sectional heating boilers and the steam generator. It is a small hospital indeed in which the employment of high-grade firemen will not result in a saving in fuel more than offsetting the increased amount of wages.

In larger hospitals the use of the regular horizontal fire tube boiler is to be recommended. Only in the largest of plants, that is, those requiring 1,000 boiler H. P. or over, may the use of the water tube boiler be advised, for the fire tube boiler is equally safe, economical and durable.

Automatic stokers may be used for two purposes. First, to eliminate smoke where soft coal may be used to advan-

tage, and second, to save labor, which becomes possible only in plants of 1,000 boiler H. P. or over.

Recently more emphasis has been placed upon a study of the economical operation of hospital plants. The smallest percentage of such plants is equipped with devices enabling the determination of the economy of operation, and yet this is a very simply matter and very desirable.

The installation of coal weighing scales of the Fairbanks pattern, set in the floor, with platform 60 inches long and 48 inches wide, will enable the weighing of the coal as fired to the boiler. In larger plants a more elaborated equipment is possible. In addition to the coal scales some device for measuring the feed water as fed to the boilers should be installed, such as the Venturi feed water measuring device, or the Lea recording apparatus. This equipment will make possible a simple calculation by means of which the number of pounds of water evaporated per pound of coal fired may be determined for each day. This will give a very good line on the degree of economy with which the plant is operated. For a refinement of this determination the temperature of the water fed to the boiler may be either read systematically from a feed water thermometer, or better still, a recording thermometer may be used to record this temperature. The coal also may be analyzed to determine the heating value thereof, and then an exact determination of the efficiency of the boiler plant may be had.

To obtain the best results a plant log sheet should be used, upon which hourly readings should be recorded of the boilers in use, draft pressure, steam pressure, feed water temperature, outdoor temperature, weight of water fed to boilers, coal fired, ash removed, service rendered to the building, men on service in the boiler room, and supplies received and used. A running account of the coal may be included, this showing the coal on hand at the beginning of the day, that received during the day, the amount used during the day, the balance representing that remaining on hand. If an electric power plant is in use, corresponding records should be made of the operating details thereof.

A careful interpretation of the records thus obtained should bring about a marked economy in the operation of the plant. An instance may be cited of a 2,000 H. P. boiler plant which, previous to the keeping of such records, had operated at 51 percent efficiency. At the end of a year's use of apparatus and records as described, the plant was operating at 71 percent efficiency.

Too often the pumps used in the hospital plant are of the duplex pattern because of the fact that they cost less than the single cylinder pumps. The latter are much more economical in the consumption of steam and this becomes of importance during the non-heating season. The greater economy of the single cylinder pumps more than warrants their increased cost.

The piping system of the hospital is most complicated because of the varied service demanded. There must be, first, the high-pressure piping system operating at the maximum pressure required, which would be that required by the engine if a lighting plant is included, or that required by the laundry and sterilizer system if no lighting plant is included. Ordinarily the hospital lighting plant is operated at 80 to 100 pounds steam pressure and this would thus be the boiler pressure. The sterilizers should then be provided with an independent system of piping conveying steam at approximately 60 pounds pressure. The pressure required for the operation of the laundry apparatus is the same, but usually the laundry apparatus is so located that a separate system of piping may well be used therefor and this is desirable in any case. The kitchen apparatus requires steam at approximately 30 to 40 pounds pressure and should, therefore, be on a separate system of piping. The heating pressure, customarily 2½ pounds, involves necessarily a separate system of piping. Each of these systems is supplied with steam directly from the boiler header through an automatic pressure reducing valve.

Automatic temperature regulation fails to receive proper recognition only because a number of cheap devices have been used for the purpose and many cheap installations have been made.

There are now available two or three systems free of rubber diaphragms and similar causes of failure, and which may be counted upon to give accurate and lasting service. The use of such a system prevents overheating and results in marked economy of fuel.

There are two types of thermostats in ordinary use. The first is that known as the positive thermostat. This opens the valves or dampers wide or shuts them tight, providing a full supply of heat or no heat, and is liable to result in first overheating, and then underheating or drafts. This thermostat is not to be recommended, although it is largely used. The second is that known as the intermediate acting thermostat, which modulates the supply of steam to the radiators and the movement of the dampers in such a way as to graduate the supply of heat exactly in accordance with the demands of the rooms or the outside temperature. This thermostat is therefore to be recommended in all cases, except on radiators where a gravity steam heating system is used. The necessity of the use of the positive thermostatic control of the heat is in itself a condemnation of the gravity steam heating system and an argument in favor of the vacuum system wherein the supply of steam to the radiators, as well as the position of the dampers in the ventilating system can be modulated as required by room conditions.

In every plant steam and hot-water pipe covering is freely used, but the use of the highest grade materials is not as common as it should be. The use of the highest grade covering, which is naturally the most expensive, is amply warranted by the greatly increased saving of fuel resulting.

The use of sheet metal ducts for conveying air in a ventilating system is to be recommended in preference to the use of masonry ducts and flues, despite the fact that the sheet metal ducts cost slightly more. The sheet metal ducts are cleaner and involve less resistance to the movement of the air.

The use of air washers provides for a supply of clean air wherever ventilation is required, and this alone should be sufficient to assure their use in every case where ventilation is desired.

At a very slight extra expense humidification may also be best provided by means of the air washer. Further, the use of the best types of air washers provides for a considerable degree of cooling in warm weather without artificial refrigeration. In the case of two school rooms recently observed by the author it was found that with an outside temperature of 84 degrees a room temperature of 71 degrees was maintained throughout the day with a relative humidity not in excess of 65 percent.

Standard air washers are made 4 feet 10 inches, 7 feet and 9 feet long. The first provides a reasonable degree of air cleansing, but little cooling; the second provides a greater degree of cleansing and more cooling; and the third provides a maximum of cleansing and cooling. Ap-

proximately the same amount of humidification may be had from all of them.

The ventilation system of the hospital may vary in its extent. It may consist merely of exhaust fan ventilation for the laundry, kitchen, toilet rooms, diet kitchens and other service rooms, which should be divided into separate systems for laundry, for the general kitchen, for the toilet and service rooms, and for the diet kitchens. This smallest amount of ventilation may be supplemented by an exhaust fan system of ventilation for the large wards, and to this may be added a fresh-air supply fan system for the wards and important patients' rooms.

The extent and nature of this equipment must be dictated by the nature and location of the hospital. A hospital located in a rural district manifestly requires less artificial ventilation than one located in a congested city district. The author believes that a complete supply and exhaust system for all of the larger patients' rooms is amply warranted in the latter case, for ventilation by natural means cannot be assured in the case of a hospital surrounded by high buildings, particularly on days of dull or stagnant atmospheric conditions, and the opening of the windows often subjects the patients to the annoyance of noise, dust and drafts.

In the case of the kitchen, laundry and sterilizing equipment a desirable medium should be secured between underequipment and overequipment, the latter often resulting from the use of manufacturers' plans and specifications for these equipments.

In connection with plumbing equipment frequently resort is had to standard plumbing fixtures, with little consideration of the specially designed fixtures and equipments which several manufacturers make for hospital work.

For the drainage system wrought iron pipe in the so-called Durham system is mostly used. For the cold water distributing mains galvanized iron or steel pipe is largely used. A more durable pipe is the lead-lined iron pipe, which costs possibly twice as much as the galvanized iron pipe. For the hot water piping system galvanized iron or steel pipe is largely used, but this should never be inasmuch as it is short lived. The gases liberated in the hot water attack and rapidly destroy the iron and steel pipe. Brass pipe is much more durable than galvanized iron or steel pipe, but it is very expensive. For this work, also, the lead-lined iron pipe will be found quite as durable as the brass pipe and about one-third less expensive.

In some hospitals having a refrigerating plant water for drinking purposes is cooled and circulated to the kitchens, serving rooms, diet kitchens and to drinking fountains located in the corridors. For this purpose lead-lined or brass pipe should be used.

In general, the hot water supply is furnished by means of large storage tanks containing steam coils. Considered from all standpoints, this is probably the best means. It provides for an ample storage of hot water and eliminates the sudden demands on the boiler caused by instantaneous water heaters having no storage capacity, and steam and water mixing valves. Such instantaneous heaters and local mixing valves make necessary the installation of sufficient boiler capacity to provide steam for heating and other hospital purposes and the heating of the hot water to the extent of the maximum instantaneous demand, while in the case of the storage heaters the peak, or maximum load on the boilers is lessened because the heating of the water may be accomplished through a longer period of time. The author believes the advantages of such storage heater, together with the installation of the hot water distributing mains, are greater than any objections thereto. Certainly the loss of heat in distributing the water is no greater than the loss of heat in distributing the steam to the various points where it must be used for heating water in mixing chambers. There are available mixing valves, by means of which the water may be heated by the local injection of steam, which give satisfactory results and are as safe as any mechanical device may be, but the assurance of a constant supply of hot water within a temperature assuring protection against the burning of patients may best be secured by the use of the storage tank, wherein the temperature of the water is thermostatically controlled. Where possible it is recommended that one storage tank be provided for the laundry and kitchen, where water of a high temperature is desirable, with a separate tank for the remaining demands of the hospital where water of a lower temperature is desirable, to assure the protection of the patients against burning. These two heaters may be cross connected so that either one may serve both purposes while the other is being repaired.

The demands of the hospital electric system are well understood and it may therefore be only necessary to say that the use of direct current may be justly considered essential in a hospital where motors are used, especially if such motors are used in connection with the ventilation system. The alternating current motors are inherently noisy. Direct current motors operating at a speed not in excess of 900 R. P. M. may be had, which will be free from objectionable noise.

The most desirable system of electrical distribution is the three-wire 110-220 volt system, the lighting being accomplished by the use of 110-volt lamps, while the motors are connected to the 220-volt service. In all except the smallest installations the lighting and motors should be on separate systems of wiring back to the main switchboard. In large hospitals the low-tension service required for the call system, clock system and telephones may best be provided by means of motor-generator sets.

In hospitals costing $75,000 or over the installation of a refrigerating plant is most desirable. Where refrigerators are scattered over the building the brine system of distribution is to be preferred, as it eliminates the danger of ammonia leaks, although in small buildings it is possible to install a direct expansion ammonia system without appreciable risk.

In plants requiring not over five tons of refrigeration in twenty-four hours the best type of plant is the automatic refrigerating machine, which automatically starts and stops according to the demands for refrigeration. This is a motor-driven compression type of machine. In larger plants, up to 15 tons capacity, the usual compression type of steam-driven machine may best be used. In still larger plants the absorption type of plant will be found the most economical in operation inasmuch as it may be designed to operate with exhaust steam. The cost of water for cooling or condensing purposes is approximately the same in both the absorption and compression types of machines. Provision for the use of this cooling water should be made by means of storage tanks usually placed at the top of the building. This water may then be used in the laundry and kitchen, and in some cases it may be used to advantage in flushing the water closets of the building.

Vacuum cleaning plants are less used in hospital buildings than their merit deserves. In their present degree of development they are very efficient devices, and they surely provide the most sanitary method of cleaning.

Incinerators are generally used in all large hospital plants. They should be of the high-pressure pattern and of ample capacity. A single large incinerator located in the basement is usually found more satisfactory than the smaller incinerators distributed about the building because of the fact that the smaller incinerators may not economically be operated continuously at a sufficient temperature to destroy all refuse matter and garbage without offensive odors or smoke.

Nearly all large hospitals, that is, institutions costing $150,000 or more, have their own electric power plants. No institution or type of building has greater warrant for the installation of such a plant than the hospital. It has the longest period of heating of any type of building and the greatest possible use for the exhaust steam from the engines. The exhaust steam may be used for heating the building, for heating hot water, and it may be used to a large extent for drying purposes in the laundry. It may also be used in refrigerating plants of the absorption type. The latter has the special advantage of making use of the exhaust steam at a period of the year when a considerable portion thereof could not otherwise be used. The large amount of hot water required in the hospital also provides for an unusually extensive use of the exhaust steam during the nonheating season.

A brief explanation of my reason for advocating the double use of steam, first in the engine and then for heating, may be of interest. Assuming a boiler steam pressure of 100 pounds, each pound of steam will contain 1,189 heat units when reaching the engine. Upon leaving the engine at a pressure of approximately five pounds each pound of steam will contain 1,156 heat units. Thus but 33 heat units have been absorbed by the engine, or approximately 3 percent. Possibly five to seven percent more may be lost in condensation in the engine cylinders. Thus at least 90 percent of the original heating value of the steam is conveyed to the heating system. Practical experience has proven that exhaust steam is more efficient in heating work than live steam, so that a portion, and perhaps all, of the loss in the engine is compensated for in this way.

The heating demands of a hospital will be found to be three to four times greater, as related to boiler capacity and fuel consumption, than will the demands for electricity. The installation of the electric power plant will not in any way increase the boiler capacity required or the fuel consumption during the greater portion of the heating season. The additional amount of service required because of the installation of the electric plant is very small. In fact, in very small hospitals no extra service is demanded, in medium-sized hospitals one extra man may be required, and only in the largest hospitals will two or three additional men be required.

Usually the installation of an electric power plant will pay for itself within three to five years, including proper allowances for interest and depreciation. The extra cost of service is largely offset by the increased economy in the operation of the heating plant because of the higher grade of service employed.

Protection against interruption of service is quite as great as in the case of street service. In connection with over fifty isolated plants designed by the author no interruption of service has ever occurred and some of these plants have been in service twenty years.

It may be asserted that in no other department of hospital administration are the losses and wastes so great as in the maintenance and operation of the heating, power and mechanical equipments.

The successful design, installation and operation of the hospital plant involve a high degree of training and skill in the theory and practice of mechanical, electrical and sanitary engineering. These things are engineering problems, not medical or surgical problems. They are only remotely problems of administration. It is not to be expected, therefore, that the hospital superintendent or the hospital's business manager should be able to produce efficient and economical plant installation and operation. It is, however, unfortunate that oftentimes such expectations are entertained.

The suggestion offered by Mr. Bartine in his admirable paper on "The Building of the Hospital—Organization and Methods" that the hospital's operating engineer should be made a member of the advisory committee to the building committee is to be strongly commended. Many of these men are high-grade men of marked ability and have accumulated a wealth of information relating to the devices suitable for the equipment of the hospital plant. It is regrettable that every hospital should not have an operating engineer of this class, but, sad to relate, many hospital boards will not pay suitable salaries, preferring to save a few hundred dollars in salary while losing many times this amount in wasted fuel and depreciation of plant. The author has in mind one plant, the installation of which cost over $100,000, in which the unnecessary depreciation in the first year cannot represent less than $5,000, and the waste of fuel cannot represent less than $500 more, and all because the institution will not appropriate sufficient funds to employ a competent chief engineer at a cost of perhaps $500 above the salary now paid.

The ability of the operating engineer (and the ability of his assistants) and the efficiency and economy of the plant go absolutely hand in hand. The employment of cheap engineers and firemen inevitably means high fuel, water and repair bills and an increased depreciation of the plant.

It is not to be expected, however, that a man of such technical training and experience as to be capable of the design and installation of a mechanical plant, or who would understand the science of efficient and economical plant operation, will assume the position of operating engineer at a salary paid in such positions. The cooperation of the consulting engineer and operating engineer is much to be desired, but the varied experience and technical training of the consulting engineer is essential to assure the installation of the most durable and economical plant. Similarly the operation of the plant involves problems of fuel combustion, generation and distribution of steam and electricity, and the most efficient utilization thereof, in which theory and practice of the consulting engineer should be employed to supplement the experience of the operating engineer in order to secure the best results.

There are many consulting engineers who have personally designed and supervised the operation of hundreds of plants. It would be strange indeed if in this work they had not secured such information and experience as could be most advantageously applied to the installation of additional plants. If this experience has been largely in connection with hospital buildings just so much more valuable will it be to the prospective hospital.

The best efforts of the consulting and operating engineers may fall far short of the best attainable if the building committee or architect so reduces the amount available for the installation of the mechanical equipment that the best materials may not be used, or to such an extent that devices to determine the economy of the plant's operation must be omitted. The use of cheap valves, pipe and other materials will result in constant annoyance and

high repair bills. The use of cheap steam and hot water pipe covering materials will result in an excessive waste of heat, which may be neither detected nor prevented. The elimination of coal scales and boiler feed water measuring devices will surely result in a low boiler plant efficiency. Elaboration in the mechanical equipment is to be avoided by all means, but the essential requirements may not be ignored without involving a continuous and serious expense.

Discussion of Mr. Kimball's Paper on the Mechanical Equipment of Hospitals

BY OLIVER H. BARTINE.

Before the Seventeenth Annual Conference of the American Hospital Association, San Francisco, June 22-25, 1915.

This paper, prepared by an engineer of twenty years' experience in the design and installation of hospital equipment, as well as the equipment of school and other public buildings, gives us an authoritative statement of the present status of the problem of ventilation and also of the latest developments in the line of hospital building equipment. The author has the advantage of the most intimate contact with the latest developments in the investigations of the problems of ventilation because of his membership in the New York State Commission on Ventilation and his official position as President of the American Society of Heating and Ventilating Engineers.

The statement of the present status of ventilation would indicate a definite conclusion as to the subject of temperature to the effect that high temperatures are decidedly harmful and the maximum temperature should not exceed 68 degrees. Also, that stale air has a definite effect on the appetite, which must indicate other and more serious effects. Apparently the problem of humidity is not yet settled, nor the effect of low temperature.

All doctors, hospital superintendents and others will be interested in the outcome of the study of natural ventilation as compared with artificial ventilation. It would seem as though this paper puts it squarely up to our superintendents and doctors to give scientific data concerning the relative merits of a really modern ventilating system as compared with the natural or window ventilation system.

In referring to the new method of determining the volumetric supply of air for ventilation, it is to be noted that the figures are based on the temperature of the air entering the room of 10 degrees less than room temperature. It is quite possible, and even probable, that for hospital work 5 degrees less than the room temperature as the temperature of the entering air would be better. This would double the volume of air or provide 60 cubic feet of air per minute per patient, which would doubtless be better for hospital purposes.

The distinction between old and new ventilating systems is emphasized. It may be that we have not given sufficient consideration and opportunity to the new ventilating systems and their possibilities. Undoubtedly the old systems were subject to many objections, especially in the matter of the high temperature of the air supplied therefrom. It is worthy of note that it is stated that the temperature of the air used for ventilation should not exceed the room temperature.

The reference to recirculation of air may be interesting from an experimental standpoint or in connection with some classes of buildings, but would hardly be applicable to hospitals.

The reference to the work of the New York State Commission on Ventilation is most interesting and every person interested in this subject should lend his cooperation. I would suggest that any data obtained concerning any of the problems of ventilation should be communicated to the Secretary of the Commission, whose address is St. Nicholas Terrace and 139th street, New York City. I understand that the Commission would be especially glad to receive any information concerning artificial cooling of hospitals.

The relative merits of steam and hot water heating have been presented to us in this paper by one who has used and observed both systems and whose opinions as stated are agreeable to my own experience in hospital heating and ventilating.

Concerning the use of devices for measuring the efficiency of the plants in operation, I can say from personal experience in the new building of the Hospital for the Relief of the Ruptured and Crippled in New York City, where we have these devices in use, that they are of inestimable advantage in maintaining the operation of the plant at the maximum efficiency. We certainly could not afford to be without them.

After experience in the use of both local heaters and storage tank heaters as a means of hot water supply, we adopted the storage tank system in the new hospital referred to with eminently satisfactory results.

The explanation given as to the relative merits of the isolated electric power plant is very clear and helpful. With the information given we may readily understand why these plants are so generally used in hospital work and why they bring about the economy noted. It is an interesting fact that of the thirty-one hospitals on Manhattan Island which have one hundred beds or more, 78 percent of them have their own electric lighting and power plants. Of the remaining number several are city installations and the policy of the City of New York, which is believed to be largely influenced by political motives, is against the adoption of isolated plants in city institutions. The efficiency of the isolated plant in the hospital appears to be due simply to the extent to which a double use of the same steam may be made.

We can all endorse in theory, if not in practice, Mr. Kimball's argument in favor of high-grade installation and intelligent operation. Nothing means inefficiency and waste to such an extent as cheap labor.

Young Woman Serves Hospital as Superintendent and Takes Place of Ambulance Doctor

Over a picture showing Miss Julia Murphy, superintendent of the Southside Hospital, Babylon, Long Island, with an emergency grip in hand, entering a motor ambulance, the Brooklyn *Eagle* prints the following:

"When an ambulance call comes in to the Southside Hospital at 2 o'clock in the morning, no intern is yanked roughly out of the Land of Nod to go out on the case, for the institution hasn't an intern. Instead, Miss Julia Murphy, superintendent of the hospital, goes out, leaving one of the other nurses in charge.

"The territory served by the hospital is very large, covering almost the whole South Shore, as there is no reception hospital between Mineola and Southampton, and Miss Murphy is often treated to rides of fifty or sixty miles. During the eleven months the ambulance has been in commission Miss Murphy has gone out seventy-five times, as far east as Moriches and as far west as Manhattan.

"Miss Murphy's last call, a week ago yesterday, from Hemlock Beach, opposite Amityville, was a thriller. A member of the Gilgo Coast Guard crew was drowned there, the call coming by way of Quogue. Within three-quarters of an hour after the call had been received Miss Murphy and another nurse, with a pulmotor, were at the scene, having traveled five miles in the ambulance and five miles in a fast power boat. The man could not be revived, however."

CURRENT HOSPITAL LITERATURE

ALBERT ALLEMANN, M. D., Foreign Literature.
Army Medical Museum and Library, Office of the Surgeon General United States Army

A War Hospital for Mental Diseases (Ospedale psichiatrico di guerra). Rivista ospedal., Roma, 1915, V, No. 11.

Mental disease in soldiers due to the terrors of modern war is quite common in all European armies. Lately the medical department of the Italian army has established a special hospital for the treatment of soldiers who have become demented in the present war.

Annual Report Superintendent of Nurses and Principal of Johns Hopkins Training School. E. M. Lawler, Johns Hopkins Nursing Alumnæ Magazine, 1915, XIV, No. 3.

The splendid growth of the hospital and training school and its ever-increasing responsibilities are vividly revealed in the report. The nursing staff in 1891 consisted of 57; in 1910 it had increased to 142, and today, not including the 84 special nurses, the staff numbers 272. The class of 1915 was the largest in the history of the school.

A Depilatory for Preparing the Scalp and Other Area for Operations at the Front. Alexander Don, The Lancet, London, 1915, II, No. 7.

The depilatory recommended is a mixture of sod. sulphide, cold water, starch and fine unslaked lime, mixed to the consistency of a thick soap. This is rubbed into the whole scalp (after it has been washed and the hair cut with a clipper) and allowed to remain for about ten minutes. The whole can then be taken off with the back of a spatula, leaving the scalp quite bare and with no cuts.

The Visiting Nurse in America—"Queen's Nurse." The Nursing Times, London, 1915, XI, No. 536.

The trend toward municipal control is quite evident in the mind of this "Queen's Nurse" from the following:

"The hour has not yet come, but is not far in the future, when this will be the universal plan, when the city will no more be without its nurse than without its teachers. And when the hour comes we will warmly welcome it, for it will lift our work entirely out of the ranks of charity, and set it where it belongs as public service, available to those of high and low degree alike, as the public school is now. This may sound Utopian, but those who read the signs of the times say that it is surely coming."

British Ambulance Unit for Italy. The Lancet, London, 1915, II, No. 8.

The British ambulance unit for Italy consists of 20 ambulances (16 given by the Red Cross and 4 by the Society of Friends), 2 lorries and 3 runabout cars. Mr. George Trevelyan, the historian of Garibaldi, is the commandant and Mr. Philip J. Baker, formerly commandant of the Friends' Ambulance Unit, is the adjutant. Dr. G. Sanderson Brock, physician to the British embassy at Rome, is the consulting physician and Dr. W. Radford Daken the consulting surgeon. The unit has a personnel of fifty-five.

Isolation Hospitals for Tuberculous Patients (Gli ospedali di isolamento per i tubercolosi). Ospedale Maggiore, Milano, 1915, III, No. 6.

In 1897 the Italian government passed an ordinance that patients with pulmonary tuberculosis should be set apart in special isolation divisions in all hospitals. But the results were not as expected. In many hospitals the order was not at all or improperly carried out. At present of 104 of the larger cities seventy-eight isolate patients with pulmonary tuberculosis; twenty-two provide for no isolation, one isolates only the male patients and four refuse to receive phthisics entirely. Thirteen of the larger cities possess special tuberculosis hospitals, and in twelve others such institutions are under construction. Isolation in Italian hospitals is still a problem awaiting general application.

The Working Expenses of a Mountain Sanatorium (Il costo di esericizio d'un sanatorio di montagna). Dr. F. Gatti. Ospedale Maggiore, Milano, 1915, III, No. 6.

The author compares the daily expenses per patient in the People's Sanatorium for the Tuberculous at Prasomaso with those of similar institutions in other countries. At the sanatorium of Prasomaso the daily expenses per patient amount to £0.6.17 ($1.03), of which 49 percent is spent for nutrition. In Germany the average expense is £0.5.09 (40.32 percent for nutrition); in Switzerland £0.3.61 (53.66 percent for nutrition); in France £0.4.22 (37.70 percent for nutrition); in Belgium £0.4.33 (43.38 percent for nutrition); in Denmark £0.5.87 (32.6 percent for nutrition); in Sweden £0.4.62 (35.6 percent for nutrition); in England £0.5.97 (48.74 percent for nutrition).

The Hospital of the City of Bergedorf (Das Krankenhaus der Stadt Bergedorf). Ing. Ruppel, Zeitschr. f. Krankenanstalten, Leipzig, 1915, XI, No. 21.

During the last few years many of the smaller towns of Germany have followed the example of the large cities and have replaced their old hospitals by new buildings which are in conformity with the principles of modern hygiene. A new hospital has lately been erected by the town of Bergedorf, near Hamburg, which has a population of about 7,000 inhabitants. The U-shaped building consists of a basement, two stories and an attic. There is room for 60 patients. The basement contains the kitchen, storerooms, the central low-pressure steam heating plant and a dining room for the servants. In the first and second stories are the sick rooms, the operation room, and rooms for the nurses. The largest sick rooms contain six, the smaller ones from one to two beds. A division for infectious diseases (10 beds) has been set apart in the main building. It is intended, however, to erect later on a special pavilion for infectious diseases. The building has a very handsome and substantial appearance, and, though all unnecessary expense has been avoided, the most advanced principles of modern hygiene have been carried out in all parts of the structure. The erection of the building cost 346,000 marks ($86,500) and the interior furnishings 96,000 marks ($24,000). The total cost per bed amounts to 7,380 marks ($1,845). The article is accompanied by 3 plans and 15 illustrations.

Operation of Massachusetts' Laws for Hospital Observation in Cases of Alleged Medical Disease and Defect. Henry R. Stedman, Jour. A. M. A., 1915, LXV, No. 7.

Dr. Stedman bases the following conclusions on an experience of ten years with "Hospital Observation" in Massachusetts:

1. Hospital observation is a measure of proved value in doubtful cases of mental disease and defect in both criminals and non-criminals, and is growing in favor.
2. It affords opportunity for constant observation and

ample time for thorough examination under the best conditions by trained hospital psychiatrists.

3. It is of especial value in capital cases, in cases with concealed delusions and in the detection of malingerers.

4. It tends to make less frequent the plea of insanity as a defense for crime, and to lessen disrespect for expert medical opinion.

5. In many non-criminal cases it saves persons from hasty and ill-considered commitment as insane.

6. There appears to be every reason why the forty-three states which are without this valuable provision should adopt it, particularly as it has been long in successful operation in some form in six states and in Germany, and has the endorsement of our foremost jurists and alienists.

The Saint Lazarus Hospital in Santiago, Galicia (El hospital de San Lazaro, Galicia). Dr. D. Pimentel. España medica, Madrid, 1915, No. 150.

This leper hospital, situated near the capital of the Spanish province of Galicia, was founded in the twelfth century. The original hospital consisted of a number of modest cabins, where the lepers of the province were gathered to prevent the spread of this terrible disease. It was not until 1878 that a large, substantial building was erected, in which more modern views of a leper hospital were realized. It is especially due to the untiring efforts of Dr. Del Rio that the new institution owes its existence. This noble philanthropist devoted his whole life to the care of the poor lepers and to the study of this much dreaded disease. The hospital grounds comprise 4,000 meters square. Through numerous donations of charitable people it was possible to make many improvements in the interior of the hospital. The usual number of patients is about sixty. Dr. Del Rio is the director of the institution. He is assisted by two assistant physicians, four Sisters of Charity and a few male nurses. A chaplain provides for the religious needs of the patients.

The Hospital of the Knights of Malta at Valletta. The Nursing Times, 1915, XI, No. 537.

The most interesting transformation resulting from the ever-increasing demand in Europe for more bed capacity for the wounded is the conversion of this relic of the past into a modern hospital. The old military hospital of Valletta was built by the Knights of Malta in the year 1575. The Knights of Malta were the Knights of St. John of Jerusalem, originally a hospital order, writes the correspondent for the London Nursing Times. The long ward, 503 feet long, 34 feet 10 inches wide and 30 feet 6 inches high, with a capacity of 100 beds, was the original hospital. It was hung with valuable tapestries, and all utensils were of solid silver. These utensils were melted down during the siege a century ago, in order to pay the French soldiers. Underneath the long ward, the vaulted chamber of the same size, once the ward for the men-at-arms, now serves as a store room; while still deeper in the rock a third chamber, where galley-slaves were treated, is vaguely referred to as the dungeons, and we are reminded of the fact that at one time the submarine cable ran through it.

Mental and Physical Survey of Supposedly Normal Children. Langley Porter, M. D., A. Huffaker, M. D., and A. Ritter, Ph. D. Jour. of A. M. A., 1915, LXV, No. 8.

A special clinic was established in August, 1913, at Leland Stanford Junior University, Department of Pediatrics, for the older children under the Children's Agency of the Associated Charities, who are boarded in foster homes. The clinic is held every Friday afternoon and each child is given a thorough physical examination, a Binet mental and a Healy psychological test. The blood is taken for a Wassermann test and a von Pirquet reaction is made.

One hundred and ninety-five children over two and a half years of age have been examined since August, 1913. Dental attention was needed in 55 percent of this group, while 53 percent had diseased or hypertrophied tonsils. Eight were referred to the eye clinic, seven to the ear clinic and nine to the skin clinic. Fifteen were found to be tuberculous and twelve presented what English observers have denominated the pre-tuberculous state. Four children have had positive Wassermann reactions.

The records of the von Pirquet tests are not complete, but report is made of 119 psychologic examinations, classifying the children as 66.5 percent normal, 23 percent retarded, 7 percent borderline, 3 percent morons and 0.8 percent imbeciles.

Installation and Working of the Prophylactic Service of the Auxiliary Hospital No. 36 at Breuil-le-Sec. (Installation et fonctionnement du service de prophylaxie de l'hôpital complémentaire No. 36 de Breuil-le-Sec.). Revue d'hygiène, Paris, 1915, XXXVII, No. 4.

This military hospital was established last November by Dr. Viry. A furniture factory consisting of two large one-story buildings, one 900, the other 240 meters square, was converted into a hospital. The larger building was, by partitions, divided into three large halls and has room for 150 patients. The smaller building contains 50 beds. Smaller rooms were set apart for the nurses, servants, pharmacy, etc. The buildings were also provided with an electric light and a central steam heating plant. All the nurses of the hospital and a large number of the town people were vaccinated against typhoid fever and smallpox. To isolate patients with typhoid or other infectious diseases, a number of boxes, 2.7 meters wide, 4.8 meters long and 2.2 meters high were built along the side walls. The front of these boxes was provided with a large window. To secure stricter isolation a board wall 1.5 meters high was built in front of the boxes, leaving an alley 1.2 meters wide between it and the boxes. As a further precautionary measure against the spread of typhoid fever only soldiers who have just recovered from the disease are employed as nurses.

The Importance of Immunizing Nurses and Hospital Attaches Against Typhoid Fever. Elmer H. Funk, M. D. N. Y. Med. Journal, 1915, CII, No. 10.

The prophylactic inoculation of all nurses in training at Jefferson Hospital, Philadelphia, was made compulsory in July, 1912. Only one doubtful case has occurred during the last three years, and the writer believes that the fall in morbidity from 1.7 percent, the average for the fifteen years prior to 1912, to 0.3 percent is largely the result of protective inoculation.

Joslin and Overlander are cited as having found the incidence of typhoid among nurses in six hospitals in Massachusetts during a period of five years (1902 to 1906, inclusive), 1.6 percent; Spooner, in an investigation carried out at the Massachusetts General Hospital in 1909, found an incidence of 1.4 during the preceding ten years.

A questionnaire recently addressed to a number of large hospitals in ten large cities to ascertain how widely prophylactic inoculation was practiced in representative institutions elicited replies from seventy-six. Two of them were unsatisfactory; 50 institutions were practicing antityphoid inoculation; in 18 its administration was compulsory or strongly urged, in 32 voluntary, and 24 hospitals were not immunizing their nurses.

Nurses and hospital attendants form a group particularly exposed to infection, and inasmuch as instruction in the application of sanitary means alone has not resulted in a distinct reduction in the incidence of typhoid among them, a combination of sanitary measures with prophylactic inoculation is urged as a means to results not hitherto attained.

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DEPARTMENT OF NURSING

MARY M. RIDDLE, R. N., Editor,
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Nurses Give War Funds

In the month of April the Massachusetts State Nurses' Association heard an appeal for assistance from Madame Marie Depage, representative in the United States of the Executive Committee appointed by the King of Belgium for Belgian Red Cross Hospitals.

The appeal came through a lecture given by Madame Depage at the home of Dr. Mixter, in Boston, which was attended by a large number of nurses whose sympathies were deeply stirred, and who determined to bring the matter to the attention of the Massachusetts State Nurses' Association. She said in part:

"We all know what America has done and is doing every day for Belgium, especially for non-combatants. Words fail to express our gratitude for your overwhelming generosity; but though you perhaps have done more than you were expected to do, we must once more ask you for help in a case of urgent and unmistakable necessity.

"The big conflict of the present war is still in the future; the most terrific fighting of all will come this spring. We must foresee the coming slaughter, and be prepared to render instant aid to the thousands of wounded, friends and foes, who will fall within our lines.

"When we shall follow the army in our devastated land, we shall find *nothing*. It is stripped bare, and often we shall not find a roof to shelter the wounded soldiers. We must, therefore, have ready in store a number of field hospitals with every supply, including beds, linen, food, instruments, sterilizers, ambulances, and even tents. We must also have a large sum of money at our disposal for expenses such as fuel and emergencies.

"I have myself seen in Turkey, during the Balkan war, what it means not to have proper field hospitals, and fully appreciate the sacrifice of life and limb from lack of early care. Perhaps I have been chosen for this mission because I know how inhuman we should be if we were not ready for the men who will pay for our liberty with their blood."

The appeal was endorsed by such eminent men and women as J. Collins Warren, M. D., George H. Monks, M. D., S. J. Mixter, M. D., Miss Boardman, Acting Chairman of the American Red Cross, and other noted Americans.

The Massachusetts State Nurses' Association has many times proved its sympathy with and ability to help its stricken fellowmen, and believed another request would not prove an exception by being unheeded.

It therefore issued an appeal to its members, as nurses "who stay at home," urging them to do something to help this people who propose to care not only for their own sick and wounded, but also for their enemies who fall within their lines.

The plan proposed was as follows: that every training school for nurses, every registry of nurses, every nurses' alumnæ association, and every other organization for nurses should collect what it could and forward it to the state counsellor from whom the appeal came to them. The counsellor should turn it over to the large committee formed for the purpose by the Massachusetts State Nurses' Association, and it should go thence to the local treasurer, Dr. S. J. Mixter, Boston.

At first consideration the committee was inclined to ask a stated sum from each and every nurse, but upon consideration it seemed wiser not to solicit a specified amount, but to be very grateful indeed for whatever anyone could spare.

It was stated that
$30.00 will pay for one bed.
$200.00 will pay for one bed and its upkeep.
$1,000.00 will pay for a ward.
$20,000.00 will pay for a whole hospital.

It was the ambition of the Association to pay for a ward, which would be assured by the reception of an average of only twenty-five cents from each nurse, and it is justified in feeling great pride and satisfaction in the following contributions made by counties to this fund:

CASH COLLECTED FOR AMERICAN BELGIAN HOSPITAL

Berkshire county	$ 35.00
Franklin county	8.00
Hampden county	36.75
Worcester county	264.81
Essex county	106.00
Middlesex county	112.80
Suffolk county	250.60
Bristol county	159.00
Norfolk county	16.54
Boston School Nurses	9.25
Interest	1.48
	$1,000.23

Thus it will be seen that the sum contributed was sufficient to pay for a ward, and while the nurses rejoice that their efforts were crowned with success and they were able to accomplish that for which they hardly dared hope, their joy in achievement is tinged with grief at the loss of the noble woman who inspired them, for it will be remembered that Madame Depage was lost to the world with the ill-fated Lusitania.

Honor to Whom Honor Is Due

The public press and the scientific press have been replete with praise of the work done by medical experts in excluding disease and in promoting hygienic conditions in the war-ridden districts of Europe.

All people, whether possessed of humanitarian instincts or not, must glow with pride in contemplation of what has been accomplished in Serbia alone by the scientific men directing the work of the American Red Cross and Rockefeller Foundation in stamping out typhus fever.

The laity must glory in the principles which prompted these men to risk their lives that others might live, and it must mourn the loss of those who proved victims of the great plague. We are taught that "Greater love hath no man than this—that he lay down his life for another." But what about the nurse who stood by his side and succumbed also? What is written or said about those who have returned broken in health and unfit for any place in life save that furnished by the care of friends and relatives, or possibly of some philanthropic body?

Would it detract one whit from the achievements of the great scientists if the nurse's efforts were given their meed of recognition?

Possibly she has no one to speak for her. It may be true that she has gone along so quietly and efficiently with her work that she is noted only by her absence, or it may

be that with characteristic modesty she has fulfilled her tasks in her best manner without thought of notice, being content with the opportunity to work and the results attained.

Any of these suggested possibilities are sufficient from her point of view, but do they exonerate others for their negligence in disregarding her part in the great accomplishment?

Another phase of the question persists in obtruding itself upon the mind of the thoughtful onlooker, viz.: What effect will this and similar instances have upon the future supply and character of the great nursing body? Would it not be a matter of simple expediency that the nurse should receive due recognition?

Everybody admits that the sick public requires the best nursing care it can secure. Will its chances for securing it be enhanced by such neglect? Will the opportunity for criticism of the qualities of the trained nurse be lessened by such neglect?

Will the inflow of the *best* young women to our training schools be increased by such neglect?

Will the spirits of those having in charge the training and output of nurses be encouraged by such neglect?

"Think on these things!"

ORGANIZING OHIO NURSING

Dr. Matson Tells of the Many Difficulties Encountered in Setting the Law to Work

During the recent conference, at Cedar Point, that led up to the formation of the Ohio Hospital Association, as described by Mr. Sheridan, of the Ohio *Medical Journal*, on another page of this issue, Dr. George H. Matson, secretary of the Ohio State Medical Board, gave a most interesting address on the difficulties the board is encountering in its attempts to enforce the nursing registration law passed by the last legislature. Ohio never had a nurse registration law before.

At the request of the editor of THE MODERN HOSPITAL, Dr. Matson kindly consented to write a short letter summarizing the points made in his talk to the hospital people. The letter, which is self-explanatory, is here reproduced:

To the Editor of THE MODERN HOSPITAL:

You have asked me to write you concerning our recently enacted nurse registration act and to relate some of our experiences incident to its enforcement.

Under the law the State Medical Board is charged with enforcement, and authorized to appoint three nurses from a list of ten recommended by the State Association of Graduate Nurses, who with the secretary of the State Medical Board shall constitute the Nurses' Examining Committee; the secretary of the board to be the secretary and executive officer of the committee and one nurse to be designated as chief examiner.

As in the case of nearly all other state laws governing nursing, only graduates of training schools and hospitals recognized by the board are eligible for registration. Those now in training are exempt from examination and have until June 1, 1918, in which to be graduated and present their diplomas for licensure.

Certificates will permit the use of the term "Registered Nurse" and title "R. N.," and those not holding certificates are forbidden the use of this title.

The preliminary educational standard for those who may in the future apply for registration is fixed at four units credit, or that required for completion of the first year's work of a first grade high school of Ohio, to be determined by the entrance examiner of the State Medical Board in the same manner that credentials of those desiring to matriculate in a medical school are determined. Training schools not requiring at least an equivalent of this amount of preliminary education cannot under the law be recognized.

Minimum professional requirements are to be determined by the examining committee and the board and may from time to time be altered as conditions demand. The scope and character of the examinations are also to be determined by the committee and the board.

It will be seen, at once, that the first and most important question for the committee and the board to determine is, "What shall constitute a recognized training school and hospital?" or, "What is to be the minimum school requirement?"

We have in the state training schools giving two-year courses, which are said to be doing splendid work, and their graduates are in demand; we have others giving three-year courses whose graduates are not considered properly trained.

Some schools with small hospital facilities and few beds are furnishing more than the ordinary didactic teaching; others with modern facilities and many beds have too few students in the training school. Here we find an overabundance of practical training and not enough didactic teaching. Even if more didactic work were given the pupils are seldom in physical or mental condition to receive it properly. Most of the hospital authorities recognize these conditions and are ready now to correct them.

We have found since the law became operative (Aug. 1, 1915) that some schools as late as 1909 were giving a one-year course and granting diplomas; that hospital authorities during the past several years have been regranting diplomas to take the place of certificates of attendance given many years ago. In one case an entirely new diploma has been given to graduates of one institution. Some of these diplomas would indicate that a three-year course was completed in 1902, while others indicate a one-year course completed at the same time.

We have learned that the so-called three-year course consisted of three one-year courses, and that in some instances at least they might well have been called ten-year courses or twenty-year courses; for the individuals holding the new diplomas attended lectures for fully that many years.

Applications are coming in from graduates of defunct schools; in some instances the schools were connected with private hospitals, and the former officers are dead, have moved away, or are hard to locate.

Graduates from schools not recognized by the examining board of the states in which they are located have no hesitancy in asking registration.

Many inquiries are coming in from those who received training at a one-man hospital; that is, all the lectures seem to have been given by one physician, and no organization or faculty is or was in evidence.

In many instances of applications from those who received training at the larger schools, no definite information can be given as to the time devoted to the various services. We are advised that the requirements in this respect are not uniform; some student nurses who show aptitude are kept in the operating room for longer periods than others, or in the surgical ward for so long a period that other branches or departments are neglected.

Our chief trouble just now is in the administration of the preliminary requirements. The law provides that after May 1, 1915, all those entering upon the study of nursing shall show documentary evidence of having completed the first year's work of a four-year high school of the first grade of this state. The law did not become operative until August 1, 1915, and many training schools of the state had agreed to admit certain students on September 1, 1915, and others September 15, 1915. Neither the schools nor the students were informed concerning the law and of course both were acting in good faith. We must not be charged with administering a retroactive measure and hence occasioning the need of shifting.

A surgeon who for several years conducted a training school in connection with a small hospital ceased training nurses some three or four years ago, but now wants to know whether his graduates may be registered. There were three student nurses, one of whom acted as night nurse, and a head nurse who did all the teaching. It is not certain about the didactic work given. Certainly a school now giving such a course, if this may be so considered, could not hope for recognition. But the question is, should we, to establish registration, recognize such work and register those who served their time in good faith and graduated?

Here is another nut to crack! A nurse, whose parents live in Wisconsin but who graduated in Cincinnati, has written us from Wisconsin that she expects to practice

her calling in Ohio. The law contemplates the registration of resident nurses under the exemption provisions. The question arises whether this applicant should be advised to return to Ohio before January 1, 1916, the date when the exemption provision ends, to establish her residence in Ohio, or should we register her on the theory that she graduated in Ohio? Of course we have our answer to such problems, but there seem to be two sides to the question. If we should register her, for instance, then why not register an applicant who graduated, say, at the Presbyterian Hospital in Chicago and desires to practice in Ohio?

Another important question for the nurses' examining committee and the board to decide is, just what should constitute a recognized training school in 1900, or 1905, or 1910, up to the present time? Of course the minimum educational standards to be adopted by the committee will decide for the future.

Probably this letter is already too long, but if we should have any serious future troubles we should be glad to write you again. GEORGE H. MATSON, M. D.,
Secretary.

The Social Life of Student Nurses[1]

BY MARY M. RIDDLE.

With this country's great increase in the number of pupil nurses incident to the multiplication of hospitals and the larger demand upon the hospitals for the care of their patients as well as the additional opportunities for nurses in the world outside, came the weighty impression that new paths must be blazed and new trails laid out for the future. The future is indeed full of demands and of promise to the well-disciplined and well-equipped young nurse fortunate enough to have had her education in the times under the auspices so favorable for her success.

It followed as a natural sequence that as the schools demanded pupil nurses in greater numbers they were obliged to admit them at earlier age than hitherto, or be willing to accept the older women who have been out of school a long time and who doubtless have tried some other occupation and possibly failed or grown *passe* in it, and who are now turning to the profession of nursing as a safe harbor for their abilities and activities.

The younger women are the newly graduated school or college girls, many of whom are assuming responsibilities for the first time in their lives, and these responsibilities are of a kind to wear heavily upon them. They must, therefore, not only be taught how to meet the cares of their newly chosen hospital work, but they must be carefully supervised regarding their own health and pleasures. Some of them, and these are often among the worthier and more useful ones, must even be taught how to take their places in the great world outside of schools and hospitals.

These conditions have caused the superintendent of the average school much concern. She has weighed the matter in her own mind for a long time and has drawn her conclusions and acted according to the requirements of her special school and her means of meeting them.

After much deliberation, one superintendent of a training school determined to present the necessities to her board of trustees. As they were wise men, their perception of the whole situation was clear, and their belief in the feasibility of a scheme for bettering conditions was at once expressed.

Her plea to them ran something like this: "We have many *young* nurses (some not over twenty years of age) who have come from good homes, perhaps in the country; most of them are high school graduates, some are college bred, but very many have no particular point of view. They are sent to duty in the wards, and they go and come faithfully, but when they are off duty they choose their associates, sometimes with little discretion; or else they mope and dull their wits and sensibilities by so doing. They go out without advice, they come in without comment from any one and without exciting the interest of any one unless perchance they are later than the prescribed hour.

"The nurses' school should have at the head of its home a young woman, preferably one who is not a nurse, but who is well educated, alert, quick, bright and in sympathy with younger women and their interests. In short, she must be a woman of high ideals and one whom the nurses will delight to follow. She should direct their pleasures and guide them in hygienic ways for their health's sake; she should direct them to places of interest when off duty, and if need be, chaperone them; she should see that they are provided with suitable and interesting reading and recreation in their home; she should teach them how to meet people in a social as well as a business way; she must keep them in touch with the world outside of the nursing life, and she should be at all times one of their most valued friends.

"Gentlemen, the need is great. Does this appeal to you?"

"It does," was the reply, "but the hospital's finances are limited. How shall we meet this new demand upon our treasury?"

That superintendent was not a financier and could not answer, but upon the board were those of wide vision and broad minds, who delight in solving intricate problems as well as in doing good. One of these members arose and said, "I will finance this scheme for one year if the hospital will signify its willingness to take it over at the end of that time provided it is a success and we have proved its usefulness to our particular school."

This was the sanction needed, the plans seemed destined to be immediately realized and the next step was taken which was to secure the proper young woman to bring about the desired results. For the want of a better title she was called the Physical and Social Director of the Training School. The superintendent had no particular directions to give, she could only state what she wished to accomplish.

The young woman who undertook to initiate the work proved exceptional. She was a graduate of a college and had five or six years' experience as teacher in a private high school, where she directed all the girls' activities. She had no precedents from which to take a cue and she had no prejudices to overcome. During the first year she kept constantly before her the goal, and with eyes fixed upon it she started the work, having been given unusual freedom for it and support in inaugurating it.

Her very first act was that of making the home attractive by placing flowers about in unusual places and thus exciting the attention of the nurses. So successful did this prove that she continued it until every plant and shrub in the garden was covered with snow and she was obliged to fill her vases with pine branches from the nearby woods and boughs from the cedar trees, but she understood her young women and they were impressed.

She overhauled the library and by means of a new arrangement of the books upon the shelves and a new catalogue she directed attention to them, and then by her own knowledge of them and the very interesting manner in which she imparted it, her young women were won from another standpoint and of their own volition patronized the reference library as never before.

As the home library was rather meager, she conceived the idea of increasing it by cooperating with the public library in the city. Because of the interest of the hospital

[1]Paper read at the Annual Convention of the National League of Nursing Education, San Francisco, June 22, 1915.

trustees in the school and because some of the same men were trustees of the public library, she had the nurses' home made a sub-station of the library, which now delivers one hundred new books each month to the home and removes the number left there the previous month.

A well lighted and comfortably arranged reading room with current newspapers and periodicals was established and proved a Mecca to the tired nurse on her return from the arduous work of the ward.

A vesper hour for day nurses and a twenty-minute song service for the night nurses was held every Sunday evening.

A few theater parties and visits to places of interest were made, but much more dependence was placed upon resources in the home and what could be brought in.

Leaders in many lines of the world's work were welcomed to the home and every one was generous in responding to a request for a talk about his or her special activity.

Many came to entertain the school in the happiest manner. Cooperation between the training school and other institutions of the city, such as schools and churches, was started and continues to grow with benefit to all by proving mutually educational.

A student branch of the Young Women's Christian Association was organized and accepted by the national organization. For this the nurses elect their officers each year and carry on its business according to the rules laid down by the national body. They also elect two of their members as delegates to the Y. W. C. A. student conference held annually. The school pays all expenses of these delegates and must earn money to do so. The superintendent of the training school stipulates that nurses acting as delegates must be willing to consider the time thus spent a part of their vacations.

The clergymen of the local churches, officers of the Y. W. C. A. in the neighboring city, and nearby schools, colleges, members of mission boards, settlement workers and active Christian men and women of many professions, have graciously addressed the Sunday evening meetings and made of them a pleasure but never a duty in the thought of the nurses.

These meetings are supervised and partly arranged by the physical and social director, who knows that the music committee is doing its duty and that provision has been made for each part of the service. She then puts the service into the hands of the officers of the Y. W. C. A., for it is considered good discipline for the nurses to conduct it and to subject themselves to commendation or criticism as the case may be. The meetings are always attended by the officers of the school and not infrequently by members of the training school committee or trustees.

The members and friends of the school felt that a long step forward had been taken when they were able to assemble the graduating class and pupils of the school in the recreation hall for the baccalaureate sermon, which was delivered on the Sunday evening preceding the date of graduation. The participants took such a degree of pleasure and satisfaction in this event as they have seldom experienced in hospital work, not only on account of its immediate results, which were uplifting, but also because it marked a general advancement of standards.

Outdoor sports form an important feature in this scheme, and every inducement to a healthy outdoor life was offered in tennis, basket ball, archery, a skating rink and a toboggan slide. Almost every other exercise is optional with the nurse, and pains are taken to entice her out of doors; but should she prove unwilling to go for pleasure she is shown her duty and told that she must spend a certain amount of time in the open air each day, though she need not necessarily participate in the games and amusements furnished.

Particular attention was paid to the outdoor exercise of the night nurses, as they are apparently a little less inclined to make the effort.

Longer and shorter walks in the country were taken and they sent the nurses back to their patients renewed in body and spirit.

Tennis tournaments were held and friendly class rivalry ran high.

A club for each class met twice a month from October to April, for amusement or education. The seniors called theirs the Current Events Club and arranged their programme at every meeting in accordance with their title, and they almost always added a short story. The stories were by standard authors and their selection must have cost some one considerable thought. The club meetings were scheduled for the evening of the day when the pupils had their hardest class work of the week. One of their number was appointed to lead in the recitation of current events and one to read the short story, while the others sat about with their sewing or other hand work and listened.

The Juniors called their club the Book-Lovers' Club and carried it on very much like the one already described. The first-year nurses chose to study the art and history of dancing. Folk dancing was much appreciated as well as the social dances and the occasional dancing party.

An hour in breathing exercises and tone production was given once a week in each class for general culture of the speaking voice.

Besides the clubs and classes the school was entertained fortnightly by one of the classes in some simple way, the hostesses for the occasion being chosen by the class. These entertainments were thought to be most beneficial, because the hostesses were put on their mettle to entertain in a pleasing and acceptable manner at little or no cost.

Thus are outlined the activities for the first year under the physical and social director. This account does not by any means give an adequate idea of all that was accomplished, but it states the purposes and plans, and shows their success when practically applied. The results of these activities were especially seen in a better school spirit and a loyalty that amounted to inspiration.

Instead of the school family being merely a working organization it became one united in its pleasures and enterprises as well, with a unity almost equal to that of a family. Nurses became better acquainted and found and gave sympathy.

Instead of having to be urged to take exercise in the open air, the nurses looked forward to it and soon forgot the slight inconvenience of changing a costume for the purpose. The increase in outdoor exercise promoted the health of the school and therefore the happiness and efficiency of each nurse.

Hitherto the members of the school had found it necessary to leave the premises for pleasure and diversion, but with the new opportunities at home the desire for entertainment elsewhere seemed to lessen and permission for absence after the prescribed hour was less frequently requested.

There can be no doubt of the usefulness of this kind of work in our nurses' schools for the cultivation of the qualities of the nurse which have heretofore been allowed to lie dormant. These qualities add much to her value if cultivated, whereas the absence of these qualities at least retards her progress and may bring criticism and even contumely upon the whole profession.

Who among the officers of our schools cannot recall instances of woful ignorance of the ordinary social observances in the households of well-to-do families? A young nurse launched into one of these homes is often so overcome and awed by what seems to her great splendor that she is unfitted for her nursing tasks. She has never seen some of the forms and ceremonies commonly observed. At home candles were long ago relegated to the attic, and she is perhaps surprised to find them upon the dining table of the patient's family. She goes with the family to the library for the after-dinner coffee and forgets her patient until reminded by some member of the family that now perhaps her patient may require her care.

The personal experience the nurse gains in acting as hostess to the school at a little party does much toward enabling her to gain the poise so necessary to qualify her for after occasions when she comes in contact with conditions of the same character on a larger scale. There should be no criticism of her because she does not know all the minor customs, for many of them are not altogether worth knowing; but criticism may rightly come when she cannot maintain herself in their midst.

Again, it is a subject of remark that the nurse is too often ignorant of common characters in history or even in her profession. She may be forgiven for not knowing George Washington or Abraham Lincoln, but how can ignorance of Florence Nightingale or Mrs. Robb or Linda Richards be overlooked? Equally vague are the notions about more recent affairs in her own profession. She may know about a district nursing association, but she has not yet come into knowledge of the great body of public health nurses; she may know something of the various state associations for nurses, and she may belong to the one in her own state, but she has associated it always with the question of registration, and she reasons that now since state registration is secured the function of the association should cease; and when asked to become a member of her alumnæ association, she may reply, upon having it explained to her, "I do not see much in it for me."

These are all straws, but they show that the wind stirring them comes from the arid desert of ignorance and narrow-mindedness, and confirms with renewed strength the principle that our pupils must have a foundation of good breeding and fair education.

Busy nurse teachers may teach and almost drill their pupils in the subject of ethics and etiquette, but when the instruction comes from an outsider, with that outsider's point of view and knowledge, the impression received is doubled in force and longevity.

Moreover, many of our best training school superintendents have been long in the service and have rather lost the impulse they once obtained from sharp competition in the world outside; hence this new and, one might almost say, alien spirit, stimulates every other kind of activity in the school.

Arguments almost innumerable might be cited for the necessity of such care and instruction, but let it be assumed that they have all been satisfactorily answered and let the attention be directed toward securing the proper young woman for this leader and instructor.

She had better not be a nurse, because even if she were well fitted otherwise, it would be very hard for her to get away from the viewpoint and tendencies of the nursing side of the question, whereas if she is unacquainted with that form of work in the school she will make no concessions to it in the outline and general management of her instruction.

As has before been said, she must be a woman of ideals and one whom the nurses will gladly follow, for no matter what her qualities may be she must have that within her which they consider worthy of emulation or she cannot exercise the magnetism necessary to insure success.

She must be a woman of education, and she will do better if she has had experience in association with young people and be willing to consider them her associates and comrades. To that end she will doubtless plan her absence from the home for the time when they also are absent on duty and be there when they are off duty and require her presence.

She will have many discouragements; the nurses will not in the beginning look upon her advances with favor, but will consider her activity as a demand for more of their time and energy. If she is wise she will proceed slowly from one point to another in the establishment of clubs and other interests.

The irregularities of the nurses will have a tendency to discourage the director herself. It will seem hard to have her plans interfered with by changes of nurses, by new assignments, in short, by the fact, often reiterated, that they are here today and elsewhere tomorrow; but her very discouragements may prove a benefit to them in that it draws attention to irregularities and changes which need not always be, but which may often be eliminated by a little more care and thoughtfulness on the part of the management.

She will discover many inequalities in the people, proving them to be not of one class or grade, even though nominally in the same class in the school. Such discoveries may wound the pride of the management, but they react to the advantage of all. The failure of the whole scheme is assured unless she can be given great scope for the work.

The superintendent of the school must recognize the fact that the physical and social director must be allowed to work according to her own programme—that she must be given time for it and the opportunity for doing it in her own way.

The superintendent may keep her finger upon the pulse of proceedings, and it should be her privilege to demand results, but she must be willing to delegate her authority to one who must, necessarily, be a vital influence in her school, remembering that her own influence ought not to exist merely by reason of her position, but by her inherent qualities as well.

Naturally, there will arise great differences of opinion, which usually result in mutual stimulation and have a good effect.

The whole work is large and complex and demands the surrender of many positions heretofore taken by the superintendent; it demands the cooperation of the nurses themselves; and it demands the assumption of new duties, new positions and new responsibilities by the physical and social director; but the single desire should be to give each individual nurse health and joy in her present duties, with a sense of security in her preparedness for the future.

Mr. Frank E. Chapman, for the last two years superintendent of the St. Louis City Hospital, has tendered his resignation to become effective October 20. Mr. Chapman has accepted the superintendency of the new Cleveland Jewish Hospital, Cleveland, Ohio, which, when completed, in the near future, will represent an expenditure of $500,000. It is understood that the Cleveland appointment carries with it a more attractive salary than that of the St. Louis position Mr. Chapman will vacate. The relations between the outgoing superintendent and the St. Louis city authorities are said to be quite cordial and harmonious. Mr. Chapman is only 33 years of age. He was formerly connected with the Frisco Employees' Hospital in St. Louis.

FOREIGN CORRESPONDENCE

Military Hospital Arrangements in Great Britain[1]

PART II

Immediately after the declaration of war the Board of Governors of the London Hospital placed 500 beds at the disposal of the military and naval medical authorities, 250 for each service. Early in September a message was received on a Sunday morning, asking that one hundred wounded might be accommodated that evening; and later in the day the hospital management was requested to undertake their transport from Waterloo station to the hospital in Whitechapel Road, a distance of about three miles. This was done, and the men were soon comfortably settled in their beds. While they were being cared for a further request arrived from the War Office that another 200 might be received, and this second contingent was successfully transported and settled in bed early the following morning. The method of procedure that has been evolved is as follows: The number of beds available for soldiers is reported daily in the morning to the officer in charge, Queen Alexandra Military Hospital, Millbank, and the military authorities then notify the London Hospital (or other hospital concerned) of the number of new patients that may be expected to arrive that day, distinguishing the stretcher cases from those who can walk. Transport is provided by the military. Cards are used, of different colors for the different wards of the hospital, and on arrival each patient is transferred at once from the ambulance to the bed provided in the particular ward allotted for the treatment of the particular class of injury or disease. Beef tea or some other suitable refreshment is served immediately on arrival, and the patient's clothing immediately placed in a separate canvas bag, labeled with his name, number of the bed, etc., and taken away for sterilization and cleansing. In the earlier and colder part of the year the sheepskin coats that were worn harbored vermin and needed special care in disinfection, etc. Worn-out uniforms, boots, etc., are replaced as required. Complete lists of the names of arrivals are forwarded at once to the military medical authorities at the Millbank Hospital. While in the wards of the hospital the patients are entirely under the care of the civilian medical and surgical staff. When sufficiently recovered they are drafted to various convalescent homes in the country, and when ready for final discharge they are sent to the depots of their respective regiments, the hospital being authorized to issue the necessary railway passes. There seems to have been an entire absence of friction or "red tape" in the working of the transfer arrangements between civilian hospital authorities and the military officials concerned. Up to the beginning of June 2,688 wounded men had been treated, with only 30 deaths. The resident staff and the number of student dressers are reduced to a minimum, owing to the demand for medical men for active service in the field. The visiting staff have come to the assistance of the resident medical officers at very considerable personal sacrifice, and orderlies are under training for military duty, their services being useful for the work usually performed by dressers. An important item in hospital administration has been the very great increase in price of certain drugs: Epsom salts, for instance, is 50 percent dearer; aspirin has gone up from 2s to 27s per pound; carbolic acid, owing to its use in the manufacture of explosives, is only obtainable on special authority from the War Office.

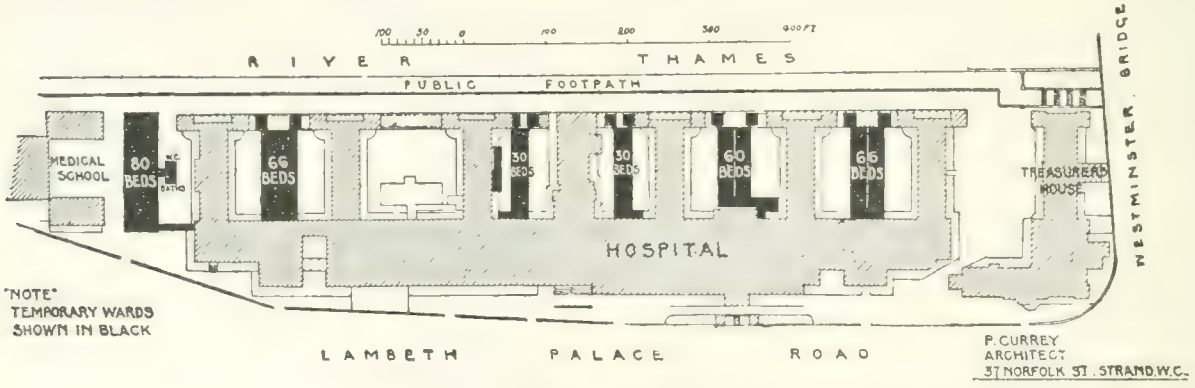

Fig. 1. St. Thomas's Hospital, London. Block plan showing temporary wards.

Some valuable suggestions as to administrative hospital procedure in relation to war exigencies have been made by Lord Knutsford, whose long experience in hospital management has made him especially qualified to give advice on such matters. As Mr. Sydney Holland he was for many years the guiding spirit in the administration of the London Hospital, the largest in the metropolis. The principal points are that the cases of wounded should be classified, so that serious injuries may be sent to one set of hospitals and slight cases to another; that the hospitals for slighter cases should be staffed by nurses who have retired from active service, assisted by probationers and

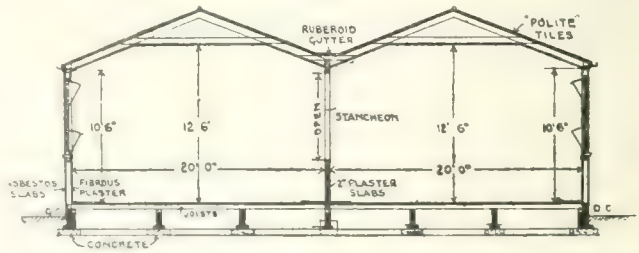

Fig. 2. St. Thomas's Hospital, London. Section through wards.

[1]Part I was published in THE MODERN HOSPITAL of May, 1915.

Fig. 3. The First Eastern General Hospital, Cambridge, is composed of a number of open-air wards, they lack a wall on one side. Some wonderful cures have been effected by this method, and many thousands of wounded soldiers who have passed through the hospital have been returned to the fighting line, after being practically given up. The picture shows a group of wounded Tommies enjoying a game of bowls.

members of the Voluntary Aid detachments; and that all hospitals should have "relief hospitals" attached to them, to which convalescent or semi-convalescent patients may be drafted, so as to keep the wards themselves as free as possible for fresh serious cases. These suggestions seem to be admirable and worthy of application to the hospital situation all around.

The terms on which transfer of hospital accommodation to the War Office is arranged must necessarily vary in different cases. An example of a good and businesslike transactions in the arrangement made between the War Office and the Board of Control of the Cardiff Mental Hospital. The military authorities are responsible for the care and treatment of the patients and for the management of the hospital, which is handed over to them with the whole of its staff as a going concern, any additional staff required to be appointed by the War Office. As to emoluments, the existing scale is not to be interfered with; the existing staff is to remain in the employment of the visiting committee, the medical superintendent continuing to make contracts and carry on the business side of the administration, but opening a separate account and reporting monthly to the War Office through the Board of Control. At the London Poor Law Infirmaries that have been taken over, the existing medical superintendent has generally been given a temporary commission and appointed as officer in charge of the hospital. The Guardians continue to make contracts and supply the provisions, drugs and necessaries, and undertake any structural alterations that may be required. Any additional staff, other than medical, is obtained through the Guardians. The salaries and emoluments of the officers taken over remain unaffected.

At St. Thomas's Hospital the problem of providing additional accommodation for wounded soldiers has been solved by the erection of temporary hut wards in the spaces between the hospital blocks (see accompanying plan, Fig. 1). This hospital was removed from its original situation near London Bridge to its present position facing the Thames, on the Albert Embankment, in 1871, being the first hospital in London constructed on the pavilion system (now almost universal). As shown on the plan, there are seven ward blocks, between which are open spaces, so that the wards each receive light and air on three sides. In the interspaces have been erected six hut buildings, two containing 30 beds, two with 66 beds, one with 60 beds and one with 80 beds, thus providing accommodation for 332 wounded. It is of course not desirable, as a general rule, to encroach upon any open space adjoining hospital wards, but when necessity for additional accommodation is urgent it is much better to do this than to increase the number of beds in a ward, or to start a fresh hospital at a distance from the administrative machinery that already exists in working order. The cost amounted to about £34 per bed. The construction is of timber framing on brickwork foundations. The framework is covered externally with a composition of wood, Portland cement and asbestos, known as "Polite," and internally with fibrous plaster distempered. The roofs are of Polite slabs. All walls have damp-proof courses. The wards are heated by gas radiators and lighted by electricity. The total cost was approximately £10,000. The accompanying figures (1, 2) show the general arrangement of the construction. The wards open on balconies (overlooking the river, opposite the Houses of Parliament), where all patients that are fit enough spend the greater part of their time. It may be mentioned that as far back as last August two American ladies, anxious to be of substantial assistance to the hospital (which is by no means a wealthy institution), sent a donation of £5,000 as a contribution to the extra expenditure incurred by the managers on account of the war.

The King George Hospital, established in the large, new building just completed of the Stationery Office in Waterloo Road, was opened for patients at the end of May. There are five floors, each containing 324 beds, and pa-

Fig. 4. Wounded soldiers sunning themselves in one of the open-air wards, First Eastern General Hospital, Cambridge.

tients were immediately admitted at the rate of two hundred a day to the two upper floors. On each of the five floors is a completely equipped operating theater, and the kitchens are on the roof. When completed the building will accommodate 1,620 patients. A strong staff of consulting physicians and surgeons has been appointed for all departments. This hospital is a very large one, each of the floors measuring nearly an acre and a half, and there being nearly three miles of corridors. The medical cases are on the first floor, the surgical on the next three, and the kitchens on the top floor; there also are ten wards for slighter cases. There are ten lifts, many of them capable of taking lying-down cases. The wards vary in size from 3 up to 65 beds. The lighting is by electricity, there being about 3,500 lamps and about 55 miles of wire. On the flat roof is a large garden with 24 revolving shelters that can be used in all weathers. Special beds have been given by the King and Queen, the King and Queen of Portugal and Queen Amelie of Portugal. The Civil Service have given 14 beds, the theatrical profession 26 beds, the 3d Army Corps 20 beds; various trades have done likewise. The erection, fitting up and staffing of this hospital have been carried out on unusual lines. As already mentioned, the building was erected to provide accommodation for His Majesty's stationery office, which has long outgrown its present habitation in Westminster. At the beginning of the war it had just been completed as a building, but had not been equipped for its intended purpose. Its situation, within a few hundred yards of the Waterloo Station of the Southwestern Railway, where large numbers of wounded are continually arriving, marked it out as a desirable building for a hospital, and its conversion to this object was decided on. The British Red Cross Society and the Order of St. John of Jerusalem undertook to equip the wards, theaters, dispensaries, x-ray and other special departments; for the former Sir Frederick Treves, and for the latter Mr. Edmund Owen have been especially active in devising and carrying out the arrangements. These societies also provide and maintain the resident medical officers and nurses.

Addition to existing hospital accommodation by means of temporary buildings devoted to the treatment of the wounded has been carried out at various centers in the provinces. The arrangements as regards cost and staffing vary in different cases. At Nottingham the War Office and the managers of the General Hospital came to an arrangement in April last, which will doubtless be followed at many other places. An addition of 150 beds has been made to the capacity of the hospital by the erection of two buildings of weather-boarding externally, with an internal lining, each containing 75 beds. The War Office provided half the total cost of £3,000, the remainder being contributed by the generosity of two gentlemen of the locality. The War Office also provides the equipment. The additional beds have a cubic space per bed of about 800 cubic feet, each ward measuring about 150x33 feet by 10 feet up to the eaves. Heating is by steam pipes, lighting by electricity. One departure from ordinary hospital practice is to be noted in the fact that there are three rows of beds in each ward. This is, of course, not desirable in either surgical or medical wards, and the results of this departure from the principles of modern hospital construction will be awaited with interest. One must be prepared to revise one's opinions from time to time, however firmly based we may believe them to be, if extended experience points in an opposite direction, but the evidence must be convincing.

As another example of what is being done in the provision of accommodation for wounded, we may mention Manchester. Up to the beginning of June about 30,000 soldiers had been received as patients. A military hospital of 600 beds was opened in the early days of the war, soon afterwards supplemented by auxiliary establishments. Every medical institution in the city that could take in soldier patients has done so. Thus, at the Royal Infirmary 200 beds were allocated to them in October, and another hundred in May. The Earl of Ellesmere lent Worsley Hall, fitted up for 130 beds. More than twenty schools have been adapted as Voluntary Aid hospitals of varying capacities, some accommodating as many as 150 patients. The total number of beds available is more than 4,000.

A Retired Army Officer.

Dr. H. J. Gahagan, superintendent of the Elgin (Ill.) State Hospital, is having a nine-hole golf course laid out at this institution for the use of patients. Dr. Gahagan believes the outdoor exercise and the competition of the game will have a very beneficial effect on the patients.

PREVENTION OF TUBERCULOSIS

Conducted under the auspices of
THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS

Tuberculosis Week

BY PHILIP P. JACOBS, PH. D.

Plans for a national Medical Examination Day, a Children's Health Crusade Day, and a Tuberculosis Sunday, all to be held in Tuberculosis Week, December 6 to 12, are announced by The National Association for the Study and Prevention of Tuberculosis.

Medical Examination Day is set for Wednesday, December 8. It will be the first effort on a national scale to urge an annual physical examination for everyone. Plans for the day include an appeal to induce everyone, sick or well, to see a doctor and learn whether they are in good physical condition. The scheme includes also the inauguration on the part of factories, stores and offices of an annual physical examination for all employees. Thousands of anti-tuberculosis associations, other societies, and dispensaries all over the country are expected to cooperate in furnishing free examinations for those not able to pay a physician.

Children's Health Crusade Day on Friday, December 10, is planned to interest and instruct school children in healthful living. Special exercises will be held at which lectures, essays and playlets will be given on the subject of health. This will also be the occasion for launching the Red Cross Christmas Seal sale in the schools.

The culmination of the campaign will be the sixth annual celebration of Tuberculosis Sunday. Last year on Tuberculosis Day over 100,000 churches gave attention to the subject of tuberculosis by sermons, talks and announcements. The governors of all the states will be asked to issue proclamations calling attention to the importance of increasing the knowledge of the public on how to avoid consumption. Clubs, lodges and societies will also be asked to consider the subject at a meeting either on Tuberculosis Sunday or some other day of Tuberculosis Week.

What Will Michigan Do With $100,000?

In the anti-tuberculosis campaign few states have had the opportunity which now is offered to the state of Michigan. The recent session of the legislature granted an appropriation of $100,000 for two years of work in the prevention and control of tuberculosis. What can Michigan do with that amount of money in two years?

Speaking generally, the money may be spent in accordance with a carefully worked-out plan looking toward definite ends, or it may be frittered away piecemeal in whatever little section of the great field seems for the moment to offer the most possibilities. Technically considered, the money may go for relief and treatment of patients, for study and investigation or for the arousing of public opinion. Whichever of these general and technical considerations is given most weight by the state board of health, to whom is entrusted the expenditure of the money, will determine the wisdom of the state in making the appropriation. The opportunity is a great one, not only for Michigan, but in its possibilities of example for other states.

Looking more closely at some of those considerations which will decide the policy of the state board of health, there is no doubt that a carefully planned program will be formulated and made public for general criticism in the near future. The combined experience of anti-tuberculosis workers throughout the country should help to crystallize such a program. That Michigan should not seek and profit by such experience is hardly thinkable.

As to whether the money shall be spent primarily for relief, investigation or education, the first of these considerations should be ruled out at once. The expenditure of $100,000 by the state in relief or treatment would have little or no effect upon the tuberculosis problem in Michigan because of the smallness of the sum involved. On the other hand, it would seem as if the most logical and the wisest expenditure of this money should be first along the line of a survey or study of the tuberculosis situation, and secondly, along the line of an extensive and intensive educational campaign that should have for its object the securing of adequate care for every consumptive.

When in 1910 the New York State Charities Aid Association adopted the slogan "No Uncared-for Tuberculosis in 1915," it adopted an ideal that was at once worthy of its highest endeavor and that was reasonably attainable. The rapid progress made in the last five years in New York should be an inspiration to Michigan. This progress never could have been attained without first of all a thorough investigation of the facts about tuberculosis, and secondly, a popularization of those facts to secure favorable public opinion. Michigan will get more value received by such a course of procedure than in any other way. It will be impossible to revolutionize a state in two years with $100,000, but by careful propaganda every town, city and country can be brought to realize its own responsibility for the control of tuberculosis.

This is the state board of health's biggest opportunity: to bring to the smaller political units of the state the responsibility for local care of the consumptive, and to make it possible to secure such care with the least effort and expenditure of money.

Five tuberculosis conferences for the discussion of matters of special interest to different sections of the United States are announced for this fall by the National Association for the Study and Prevention of Tuberculosis. The first in point of time and probably the foremost in point of attendance will be the Third Annual Mississippi Valley Conference on Tuberculosis at Indianapolis, Indiana, on September 29 and 30 and October 1. The others are the Southwestern Health Conference to be held in El Paso, Texas, the week of September 27 to October 3; the Second Annual Southern Tuberculosis Conference at Columbia, South Carolina, October 8 and 9; Second Annual New England Tuberculosis Conference, Springfield, Massachusetts, October 22 and 23; and Second Annual North Atlantic Tuberculosis Conference, Albany, New York, probably November 4 and 5.

The Minnesota Steel Company, Duluth, Minn., has begun the construction of a hospital building to cost $100,000.

PHILANTHROPY AND THE PUBLIC HEALTH

THE NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR.
BAILEY B. BURRITT, General Director.
WILLIAM H. MATTHEWS, Director,
Department of Family Welfare.
DONALD B. ARMSTRONG, M. D., Director,
Department of Social Welfare

THE SANITATION OF PUBLIC LAUNDRIES

The Bureau of Public Health and Hygiene Enters Neglected Field of Industrial Hygiene

PHILIP S. PLATT, Superintendent.

While the bureau, through a cooperative arrangement with the health department laboratories, is conducting elaborate bacteriological tests on the washing, drying and ironing processes in commercial laundries, the health department is printing and distributing to all public laundries a leaflet, prepared by the bureau and given below in full, entitled, "An Interpretation of Regulations of the Department of Health for the Conduct of Laundries."

In this almost virgin field of industrial hygiene, in which the workers' danger of infection is considerable, in which the method of washing is often insanitary, and the physical condition of the plant is generally exceedingly insanitary, there is a particular need for sanitary standards and cooperative advice. In this spirit the bureau has met and advised the city's laundrymen at several meetings at the health department.

As a part of a comprehensive program for laundry sanitation, the bureau's establishment last fall of a model wet wash laundry in the Milbank Memorial Bath, at 325 East Thirty-eighth street, may be recalled. Here, throughout the spring and summer careful bacteriological studies have been conducted, and the relative importance of such agencies as heat, soap and bleach in giving an extremely satisfactory germicidal action was determined. It appeared that while the soap solution in the dilutions used exerted no germicidal action, and the action of the bleach was only moderate, the temperature of the water (about 90° C.) which was attained was more than sufficient by itself to kill all bacteria. Results of further studies in a number of commercial laundries will be announced later.

In addition to these studies, the bureau has prepared a score card for laundries and assisted the health department in preparing its sanitary regulations, together with an inspection card to be used presently on the first systematic inspection of laundries.

The collection of data regarding sickness among laundry workers, while exceedingly difficult to secure, is being gradually accomplished. In this connection the studies by the New York State Ventilation Commission of the effect of hot, moist atmospheres on the mucous membrane of the nose and throat of laundry workers has revealed a surprising correlation between these unfavorable factors and a severe atropic condition of the nasal passages.

The interpretations of the laundry regulations of the department of health, to be placed in the hands of some 1,500 laundrymen, read as follows:

PROTECT

YOURSELF — YOUR BUSINESS
YOUR EMPLOYEES — YOUR CUSTOMERS

Interpretation of Regulations
Of the Department of Health
For the Conduct of Laundries.

REGULATION 1. Requires that the washroom *floors* shall be *smooth* and *watertight* and must be *clean* and *sanitary* and in *good repair.*

It is unhealthy to work in damp, dirty, insanitary rooms. On wet, slippery, uneven floors employees may fall and be seriously hurt. A cement floor, properly drained, is recommended.

REGULATION 2. Requires proper and adequate *light* and *ventilation.*

Employees cannot do their best work in dark, unventilated quarters. The increased efficiency of the workers will more than repay the cost of installing a ventilation system. Don't be afraid of open windows.

A dark, damp, dirty, hot corner of a cellar "wet wash" laundry. It is to such places that the so-called "hand laundries" send your garments to be washed.

REGULATION 3. Requires *suitable, sufficient* and *properly ventilated water closets.*

Decency and health demand this. Dark, cramped toilets cannot be kept clean. Facilities for washing hands should be provided, easily accessible, and washing should be insisted upon after using toilets. This means that running hot and cold water, soap and individual cotton or paper towels should be provided, and that the foreman or forelady require the use of these facilities.

REGULATION 4. Requires that every establishment shall be kept *clean, wholesome* and *inoffensive,* and *unprejudicial* to life and health.

This means that laundries must be made healthful places to work in, and that *any conditions* which harmfully affect the physical condition of the workers, such as excessive heat, excessive humidity, danger of infection, etc., must be improved. The Health De-

partment will help you decide what conditions are harmful to workers.

To safeguard further the health of the employees and the general public, the following recommendations are made:

Any employee having a cut, scratch or sore on his hands or face should report to the office of the laundry, where first aid will be applied. The State Department of Labor has authority to demand that a simple first aid kit be kept in every laundry. Such a kit should consist of the following articles, obtainable at any surgical supply house:

Instruments.

1 pair scissors.

Drugs.

2 oz. aromatic spirits of ammonia.
2 oz. 4% boric acid.
2 oz. alcoholic iodine solution, half strength (for external use).
2-3 oz. collapsible tubes of bicarbonate of soda mixed with vaseline (3%) (for burns)
2 oz. castor oil (for eye injuries).

Dressings.

1 doz. assorted sizes sterile gauze bandages.
1 spool Z. O. adhesive plaster, 1 inch by 5 yards.
3 ½-oz. packages of absorbent cotton.
3 1-yard packages of sterile gauze.
Wooden applicators wound with cotton.

At least one person should be instructed by a physician or trained nurse how to apply first aid to injured persons, and should have charge of the first aid kit and its maintenance.

Clothes obviously soiled by blood or pus discharges should be soaked in disinfectant before sorting, marking or washing. A solution of bleach (chlorinated lime), one pound to six gallons of water, will kill the germs in two to three minutes. This, of course, can be used only on white goods, and should be very thoroughly rinsed out. A disinfectant and deodorant which will not harm fabrics or bleach colored goods is "formalin." Use one gallon of liquid formalin to ten gallons of water. Let clothes soak for four or five minutes, then rinse thoroughly.

Employees should always wash their hands thoroughly with soap and hot water before lunch hour, before handling clean clothes at any time, and at close of day.

To avoid unnecessary handling of handkerchiefs, which contain the dangerous secretions of nose and mouth, they should not be marked individually but those from each family should be placed and washed in small bags.

Soiled clothes should never be shaken.

Marking and sorting platforms and floors should be thoroughly cleansed every day.

Drinking water facilities (not common cups) should be provided.

REGULATION 5. Requires that all soiled clothes shall be packed, when received, in containers which shall not be opened during transit.

This means that soiled clothes shall not be sorted, changed, and handled whatsoever, during the course of their transit in wagons on the street or upon the sidewalks. They shall always be kept in bags, nets or covered baskets until finally sorted for washing.

REGULATION 6. Requires that all soiled clothes shall be so treated in the process of washing, drying or ironing, as to destroy all pathogenic bacteria.

This is to protect the public. It is good business. It means that the Health Department forbids clothes containing living disease germs to be returned to the public. Disease germs may be in any wash. It does not state just how the disease germs shall be killed; it simply requires that the washing, drying and ironing process shall be sufficiently vigorous to accomplish this. During the "suds" the water should be at least 160° Fahrenheit, and should continue for at least twenty minutes at this temperature.

REGULATION 7. Requires that soiled clothes shall not be sorted, marked or handled in close proximity to the washed (clean) clothes.

The reason for this is obvious. The clean clothes must not be contaminated by the germs or insects on the soiled clothes. There is danger of this if the soiled clothes are not handled at considerable distance from the clean.

REGULATION 8. Forbids eating in rooms where soiled clothes are handled; or cooking where laundry work is done.

This is also to protect the health of the employees. In handling soiled clothes the hands of the workers become soiled with the invisible germs which are generally present. When food is eaten with these hands unwashed, the germs are carried to the mouth and may cause sickness. Always wash hands before eating and don't allow employees to eat in sorting room.

REMEMBER!

The Department of Health is ready and eager to assist the laundry industry, employers and employees, steam laundrymen and hand laundrymen, to give the public sanitary, cleaned clothes, and the laundry workers sanitary conditions of employment.

The wide field which these regulations so thoroughly cover and the cooperative and advisory nature of the interpretations will be readily observed. It is believed that an approach of this nature will have far more lasting benefit, through its educational and fair-play appeal, particularly at the outset of the campaign, than the more aggressive method of arrest and fine.

The Harvard Unit in the War

The nurses of New England, as well as the public generally, are following with a great deal of interest the work and fortunes of the so-called Harvard Unit that left this country in June to assist in caring for the soldiers falling within the ranks of the Allies, at a British base hospital in France.

No more representative nursing body has left our shores than these seventy-five young women, selected with care, for the most part, from New England hospitals.

According to Dr. Nichols, who returned to arrange for another contingent to be sent, they are under control of the British War Office and are therefore subject to strict discipline as well as in line for any emolument likely to come from such an attachment.

Dr. Nichols says:

"I wouldn't tell you where we were sent but for the fact that it already has been published in the English papers. We were some 15 miles from Boulonge, between two villages named Dannes and Camier—or rather, the place is spoken of as Dannes-Camier. It is only two miles from the shore and only a few miles from Etapes and the Paris Plage.

"There we saw our base hospital, where we were to serve. It was a camp hospital, one of the many scattered about behind the west front, on the railroad lines. The wards for the wounded were wall tents, holding 14 men apiece.

"There were bell tents for the officers, and enlisted men of the medical service did our cooking and camp policing. It was the best policed and cleanest camp I ever saw; flies were absolutely unknown."

The hospital system is precisely like that of our best hospitals in this country and consequently the nurses fell into the work very easily.

Another hospital near by is cared for by a Chicago unit.

It is an item of interest that these college units are being sent over at the urgent request of Sir William Osler.

It was the pleasure of the medical men to respond with alacrity to his call, and the nurses also should heed his request in the same spirit, as they have had few stancher friends in this country than Dr. Osler. For proof of this statement it is only necessary to recall his instruction given from time to time to the nurses in Johns Hopkins Training School.

PREVENTION OF BLINDNESS

MATERNITY

Conducted by CAROLYN CONANT VAN BLARCOM, R. N.
Secretary National Committee for the Prevention of Blindness; Chairman Committee on Prevention of Blindness and Midwives National Organization for Public Health Nursing.

For Organized Preventive Work

BY CAROLYN CONANT VAN BLARCOM.

For some years past the subject of prevention of blindness has appeared frequently upon the programs of medical meetings, and in conferences of health officers, nurses and social workers. The statement is made and reiterated that more than a quarter of the blind children in the schools for the blind in this country are sightless because their eyes were neglected at or soon after birth—the accoucheur neglected to use the prophylactic (a silver solution) so well known to the medical profession, or to give the needed medical care for the baby's sore eyes.

The familiar statement that ophthalmia neonatorum—capable of causing lifelong blindness—is both preventable and curable, is so generally accepted today as to be almost axiomatic. Almost each year there is written on the statute books of some state a law which is designed to

(Date).....
To the Health Officer:
You are hereby notified that (name).....
..... (address).....
was born on (date).....
and is suffering with sore eyes.
(Check the statement that applies to this case)
1. I will assume full responsibility for the case.....
2. I would like to have the Health Dept. secure hospital care for this case.....
3. I will continue to treat this case, but
(a) Would like to have the assistance of a nurse.....
(b) Would like to have the Health Dept. take a smear.....
(c) Would like an expert consultant.....
(Name of physician).....
(Address).....

Fig. 1. Suggestion for blank on which all cases of babies' sore eyes might be reported

safeguard the eyes of babies. And yet the percentage of ophthalmia neonatorum victims admitted to the schools for the blind year after year varies but slightly, and we are forced to admit with no little chagrin that scarcely more than a scratch has been made on the crust of the problem as a whole.

If the sad procession of little blind children, with state institutions as their goal, is to be eliminated, something more definite and practical will have to be done than the enactment of laws which only become dead letters, and the making of speeches and reading of papers before selected audiences.

Unquestionably, the first step to be taken in this practical work is the enactment of laws providing for the compulsory reporting to local health officers of all cases of babies' sore eyes. This would make possible the provision of medical attention for all uncared-for cases, for the battle is less than half won, even though complete reports are secured, if nothing further is done.

But we find upon making a survey of the laws that more than half of the states (thirty) do require that ophthalmia neonatorum be reported.[1]

Why, then, are the babies still going blind? Because, excepting in a very few communities, the law is neither obeyed or enforced, nor is any official action taken when information upon an occasional case does find its way to the department of health.

Fig. 2. Visiting nurse in the employ of the Department of Health, to visit all reported cases.

The filing of a report is valuable only if it instantly sets in motion a piece of official machinery capable of meeting the needs of the individual baby. At the present time the facilities at the disposal of the average health officer for giving efficient assistance, when this is desired

[1]To ascertain how far provisions for the control of ophthalmia neonatorum exist in the various states, the New York State Committee for the Prevention of Blindness has made a study of the laws and regulations which relate to this matter, these being summarized as follows:

1. The reporting of babies' sore eyes to a physician or local health officer is compulsory in 30 states.
2. The reporting law is printed on the birth certificate in 5 states.
3. Local health officers are authorized and required to secure medical attention for uncared-for cases in 11 states.
4. Births are reported early enough to be of assistance in prevention of blindness work in 4 states.
5. The question as to whether or not precautions were taken against ophthalmia neonatorum is included on the birth certificate in 9 states.
6. Free prophylactic outfits are distributed to physicians and midwives in 12 states.
7. The use of a prophylactic as a routine is compulsory in 6 states.
8. Popular educational leaflets, relating in whole or in part to prevention of infantile blindness, are distributed by State Departments of Health in 19 states.

A complete tabulation may be obtained upon application to the office of the committee, 130 East 22nd street, New York City.

by the attending physician, or needed by the attending midwife, are so limited as to be practically without value to the suffering baby. Each local health department needs in its employ a nurse to visit each midwife case and to secure such care as is necessary, and also to give visiting nursing assistance to those doctors who wish it; or there should be such cooperation with a local organization that the services of a nurse may be obtained immediately for eye work when necessary. An infant welfare nurse is admirably situated to render such service if a special eye nurse cannot be employed.

And in addition to this, there should be accessible eye clinics to supplement home care when desirable, and also

Fig. 3. Putting drops in the baby's eyes immediately after birth. This should be done as a routine.

such hospital facilities for the reception and care of severe cases of ophthalmia neonatorum that, without an hour's delay, an infected baby and its mother may be admitted and the work of saving its sight begun at once.

The value of some such practical work as outlined above has been demonstrated in a number of cities in the country, notably Boston, Cleveland and Nashville, while a somewhat more detailed system for preventing infant blindness through official action is under way in Buffalo. Health Commissioner Fronczak, through his health bulletin, supplemented by a circular letter, notified each physician in that city that

1. Babies' sore eyes was a reportable disease.
2. It was his intention to prosecute doctors and midwives alike who were found to be disregarding this legal requirement.
3. As his sole purpose in taking this attitude was to safeguard the eyes of babies, he would give as much assistance to the doctors as they wished or would accept, and therefore

(a) He offered nursing service and bacteriological examinations to those doctors who requested this form of assistance, or

(b) He would provide hospital care for those infants who needed more attention than could be given at home.

4. All midwife cases would be visited and supervised by the Department of Health.

In short, Commissioner Fronczak is determined that there shall no longer be unreported or uncared-for cases of babies' sore eyes in Buffalo—which means no more babies needlessly blind.

It cannot be denied that such work as has been started by Commissioner Fronczak would be impossible for many local health officers, because of the absence of legal authority to act, the lack of facilities with which to carry out the provisions of the law, should one exist, or, what is most important of all, the lack of support of this branch of public health work by the people in the community.

No amount of effort on the part of the health officer can be effective if after bringing a case into court the judge dares to throw it out with the remark that "any baby may have sore eyes, just as any one may fall down stairs," as actually happened in Connecticut.

Quite obviously the crux of the situation is to be found in the educational work, for no amount of legislation will protect the eyes of the individual baby if public opinion is not back of its enforcement.

The public must be so informed and enlightened that the health officer will feel secure in attempting to exercise his prerogatives, and the courts will not dare to disregard the rights of even an infant citizen to the state's protection.

In short, the success of our endeavor to secure the routine use of a prophylactic, the unfailing observation of the reporting law, the employment of a visiting nurse for eye work, and the provision of hospital facilities is really in the hands of the public.

The most far-reaching appeal for the aid of the public is the educational campaign which has been undertaken in this country under the direction of Dr. Frank Allport, Chairman of the Committee on Conservation of Vision of the American Medical Association. Dr. Allport's plan provides for at least one educational meeting annually on

Fig. 4. Hospital facilities for treating severe cases of babies' sore eyes.

the subject of prevention of blindness, to be held by each county medical society throughout the United States.

As the work of the New York State Committee for the Prevention of Blindness is largely educational, the popular meetings in New York are arranged jointly by the Committee of the American Medical Association, the New York Committee for the Prevention of Blindness and the health officers.

In order to give greater stability to this work, the Medical Society of the State of New York adopted resolutions at its last annual meeting, held April 27-29, in

Buffalo, endorsing this cooperative movement,[1] while some of the health officers through their bulletins have announced their intention of furthering vigorously prevention of blindness work in their communities.

It has also been found helpful to secure the cooperation of the superintendent of schools, women's clubs, nursing organizations, the Y. M. C. A., the churches, associations for the blind and any other organizations influential in the community.

Preparation for the meetings includes newspaper notices, announcements in the schools, churches, clubs, etc., and the posting of bulletins in public places. Sometimes it is possible to have prevention of blindness included in a general public health program, or in the program of an infant welfare week. The meetings are enlivened by the use of lantern slides on the various causes of unnecessary blindness and methods of prevention and with photographic exhibits, while educational leaflets printed in various languages are freely distributed.

It is believed that through this cooperation of official and unofficial bodies, both lay and medical, the ends which the state laws were designed to reach—that is, prevention of blindness among infants—will at least be approached.

Clearly, if babies are to be saved from blindness the country over, the successive steps to be taken are, first, the enactment of certain laws by the legislatures; secondly, fearless and unremitting action on the part of local health officers in enforcing these laws; and thirdly, staunch support and cooperation from the public at large. This requires public education—widespread and unceasing—sane and unprejudiced.

[1]These resolutions were as follows:

Whereas: About 26.8 percent of the total enrollment of pupils during 1914 at the New York State School for the Blind are blind as a result of ophthalmia neonatorum; and,

Whereas: Ophthalmia neonatorum is not necessarily a gonorrheal disease nor a reflection on the virtue of father or mother, but an infection which may occur in any labor; and,

Whereas: Blindness from ophthalmia neonatorum would practically never occur if a prophylactic were used in the eyes of every infant at birth, and if all cases of sore eyes among infants were promptly and adequately treated; and,

Whereas: The Committee on Conservation of Vision of the Council on Health and Public Instruction of the American Medical Association is endeavoring to have such uniform laws enacted in all states as will secure the adoption of these two measures; and,

Whereas: There are already on the statute books of the State of New York the necessary laws, and in the organization of the State and City Departments of Health the requisite machinery for the enforcement of these laws; Be it

Resolved: That the Medical Society of the State of New York approve the contemplated action of the State Department of Health to have all cases of redness or swelling or discharge from the eyes of newborn infants reported promptly in such a way as to secure adequate medical treatment for cases not in the care of a physician, or such assistance from the health officer in the shape of nursing or consultation or laboratory investigation as the attending physician may desire; and be it also

Resolved: That the Medical Society of the State of New York, furthering the efforts of the Council of Health and Public Instruction of the American Medical Association, endorse the effort of the State Department of Health and the New York Committee for the Prevention of Blindness to extend in New York State an educational campaign among laymen for the conservation of vision, and that the local medical societies be urged to lend their assistance in furthering prevention of blindness work in their respective communities; and be it also

Resolved: That the Medical Society of the State of New York recommend to the Public Health Council of the New York State Department of Health that it declare suppurative conjunctivitis a reportable disease as well as ophthalmia neonatorum.

The new Tacoma General Hospital, Tacoma, Wash., erected and equipped at a cost of $225,000, was opened September 1. The building is 284 feet long by 50 feet deep. It is three stories high, with two basements. The exterior construction is of cream-colored glazed brick. Situated at the top of a hill overlooking the entire city, the hospital makes an imposing appearance. The interior of the new structure possesses the latest approved sanitary features. All rooms have outside exposure, and there is a large outdoor sleeping porch for patients. Five operating rooms have been provided. The equipment of the building is said to be very thorough and up-to-date. The hospital was designed by Architects Heath & Gove, of Tacoma.

DEPARTMENT OF LIFE EXTENSION

Conducted by EUGENE L. FISK, M. D.
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25 West Forty-Fifth Street, New York City.

Findings of the Life Extension Institute in Physical Examination of Industrial Workers

Like other classes in the population, practically all industrial workers are injured, their working capacity reduced, their lives shortened and their capacity for enjoyment and achievement limited by faulty personal hygiene or bodily neglect due to ignorance of bodily condition.

The prevention of industrial accidents and of occupational poisoning, the proper sanitation of factories and workshops and the protection of workers against communicable diseases is a splendid and important work already highly organized and producing tremendous results, but the protection of the worker from self-injury, by faulty living habits and from the gradual impairment of the machinery of his body through neglect, is a work not yet highly organized, but offering even greater promise for human betterment than the comparatively narrow field of industrial hygiene.

After we have dealt with the superficial and obvious causes of death and disease arising in the shop environment of industrial workers, such as hazardous machinery, dust and poisonous fumes or the absorption of chemical poisons and the spread of communicable disease, there still remains to be dealt with a heavy mortality and a widespread impairment from chronic diseases of the vital organs and tissues, which are not caused by occupational conditions *per se*.

We have here to deal with a physical trend and a premature physical failure which is manifest in all walks of life, and is not to be overcome by safety devices, shop hygiene and public sanitation, however valuable and necessary such measures may be for other protective purposes.

We have here to deal with the total impact of modern life on the individual, and we have to consider the ways and means by which the reaction to such impact shall be an increased longevity and a higher life; a life emancipated from needless physical handicaps; a broader, fuller life in which latent ability for achievement and enjoyment shall have adequate play and not be cramped, confined and withered by premature decay.

The work of studying the total health needs and health possibilities of the individual is just commencing in a thoroughgoing and systematic way. A few municipal and state health departments are already including personal hygiene, even as related to diet and exercise, in their educational propaganda, and they are urging upon the people the importance of inspecting regularly and rigorously that community of cells known as the human body. This is a work that should, and doubtless will, be greatly extended.

The physical examination or health survey of the Life Extension Institute is designed to ascertain the total con-

dition of the individual and measure how far he falls below his attainable condition of bodily efficiency and well-being.

The figures in this paper show the results of the examination by this Institute of a group of 1,000 foremen and skilled workmen in the Ford Motor Company at Detroit, working under most favorable conditions as to environment, compensation and emergency medical aid, compared with the results of the examination of 1,000 bank clerks, etc., in New York City.

At the Ford Motor plant two examining rooms were built and fully equipped in the factory, and three physicians, assisted by two medical students, were detailed to carry on the work, one physician working eight hours a day and the others four hours each. In this way it was possible to make about fifty examination a day, when the men were marshaled for examination at twenty-minute intervals. Electric headlights were used in the examination of the eyes, ears, nose and throat; electric sterilizers were used for sterilizing the instruments; and the blood pressure was taken by the auscultatory method with mercurial instruments. The men appeared for the examination stripped to the waist, and with their consent were entirely stripped before the examination was completed. Most of the work was done under the personal supervision of the Director of Hygiene, who checked the doubtful conditions, especially in circulation, and endeavored to maintain uniform standards for carrying on the work in each examining room, as it was desired to make a special study of this particular group with regard to the influence of living and working conditions and living habits and also to derive fixed standards for recording impairments.

This group was selected by Dr. James E. Mead, Medical Director of the Ford Company, for special study by the Institute because of its homogeneous character. It was Mr. Ford's desire to secure information regarding the influence of living habits in causing impairments and to ascertain what opportunity might exist for improving the health and efficiency of this group of important workers. The results are now being studied in order to determine the probable value of the system in the general plan of adapting the work to the worker and the worker to the work, and in assisting the worker to get the most out of life activities which are becoming highly specialized and effective at this particular plant.

It is interesting to know that such an examination can be made, on the average, in twenty minutes, and that it will elicit the information exhibited in the following analysis of impairment found, which are compared with results of examinations made by the Institute of 1,000 employees in banks, trust companies and commercial houses in New York City.

Analysis of physical examination of 1,000 industrial workers (foremen and skilled workers) in the Ford Motor Company, Detroit, and comparison with the results of 1,000 examinations of employees of banks, trust companies and commercial houses in New York City:

	Detroit Ford Industrial	N. Y. City Commercial
EMPLOYEES	1,000	1,000
AVERAGE AGE	32.7 years	27 years
PERFECT	.00%	1. %
IMPERFECT—		
Advice needed regarding physical condition or living habits	100. %	99. %
Referred to physician for treatment	69. %	81. %
Of those referred to physician there were aware of impairment	10.15%	11.54%
IMPERFECT—		
Advice needed regarding living habits or physical condition, but immediate treatment not required	31.1 %	17.7 %
MODERATELY IMPAIRED—		
Referred to physician for treatment and report sent to physician	22.9 %	18.5 %
No physician or none given. Urged to seek medical treatment or guidance	39.9 %	58. %
SERIOUSLY IMPAIRED—		
Referred to physician for treatment and report sent to physician	3.6 %	2. %
No physician or none given. Urged to seek medical treatment	2.5 %	2.8 %

CLASSIFICATION OF IMPAIRMENTS

	Ford Industrial	New York Commercial
Impairments		
Heart	3.5 %	16.2 %
Arteriosclerosis—thickened arteries	24.65%	42.4 %
Slight thickening of arteries	29. %	.....
High or low blood pressure	23.1 %	26. %
Urinary, albumin, casts, etc	45.6 %	39.8 %
Combined urinary and other serious conditions	26.6 %	24. %
Total urinary or circulatory conditions	72.3 %	.....
Nervous	.3 %	1.1 %
Lungs	5.7 %	2.9 %
Venereal (syphilis)	1.2 %	.3 %
Venereal (gonorrhea)	.2 %	.....
Minor to Moderate—		
Functional circulatory pulse (rapid, slow, irregular)	21.6 %	14.8 %
Urinary	26.6 %	20.8 %
Digestive disturbances	9. %	7.3 %
Constipation	14.7 %	17.2 %
Nose, throat, respiratory	42. %	28.5 %
Ears	30.3 %	20.3 %
*Teeth and gums	69.5 %	47.8 %
Anemia	.4 %	2.7 %
Skin	6.8 %	9.1 %
Errors in diet	54.1 %	59.8 %
Errors in personal hygiene	50.5 %	54. %
Physical defects—		
Faulty vision	41. %	31.1 %
Flat foot	2.3 %	4.3 %
Faulty posture	18.1 %	17.7 %
Rupture, no truss	2.4 %	1.8 %
Overweight (25%)	12.8 %	3.2 %
Underweight (25%)	7.7 %	15.1 %
Unclassified	16.5 %	10.1 %

The notable feature of this analysis is the fact that 53 percent of this favorably-conditioned group showed signs of premature aging, as evidenced by arterial changes, varying from slight radial thickening to advanced arteriosclerosis. These conditions were very critically checked and an agreement reached by the examining staff regarding the technic and standards for determining arterial changes. The technic is, of course, simple; yet it must be properly performed or very pronounced thickening may be overlooked; or, on the other hand, high tension may be mistaken for thickening. It is not enough to merely feel the tension of the arteries. The proximal and distal circulation should be cut off by the index and ring fingers, and, if the artery is found palpable and cannot be obliterated by the middle finger, and presents a ribbon-like or tape-like feeling, when firmly pressed over the bone, thickening should be recorded. I dwell on this simple proceeding as it seems to be so commonly neglected and there is

*Teeth (Ford, industrial), 14.27%; gums, 14.07%; both, 41.01%.

no possible doubt that, in average clinical work, a faulty standard for determining this condition exists.

I am aware that certain authorities have postulated a condition of localized spasm occasionally present under this technic, and also that the "dead-house" does not always confirm the diagnosis of thickening found in the clinic. Studies at Romberg's Clinic have laid special emphasis on this fact, and the *Journal of the American Medical Association,* commenting on the conflicting views regarding the reliability of evidence derived from palpating the arteries, raises the question as to whether this procedure furnishes a reliable means of detecting thickening. Mere palpation does not, but proper manipulation of the radial, brachial and other accessible arteries should enable one to determine whether such a simple physical fact as thickening of this normally soft elastic tubing is present. Merely rolling the artery under the finger is not sufficient and may well mislead one into adjudging a high tensioned artery to be thickened. It seems probable to me that mere palpation, as in feeling the pulse, is a frequent source of error, even in important clinics, and that when the technic is properly followed in these cases, true thickening will be always recognized and found to be a constant condition. It is so often associated with other impairments that it must, at least, be regarded as evidence of an unfavorable circulatory condition and an inferior quality of "vital rubber."

Another source of error is the widespread idea that high blood pressure necessarily accompanies arterial thickening. This, of course, is not so. Unless the splanchnic vessels are involved, or there is nephritis, the pressure may even be lower than normal, as was found in a number of cases of well-marked thickening in this group. High blood pressure does, of course, precede and accompany many cases of arterial thickening.

The presence of albumin, casts or sugar in 45 percent of cases is consistent with the other conditions found, and is further evidence that the average worker is physically imperfect. In 27 per cent of cases circulatory impairment was associated with albuminuria. Albumin is reported only when the reaction is found with heat and nitric acid or Heller's tests. The methods of using these tests have been very critically checked and standardized, and all sources of possible error or fallacy guarded against While albuminuria is found to be a very common condition among men, apparently in average health, the fact that 55 percent showed no albuminuria disposes of the theory advanced by some that slight traces of albumin are normally present in the urine.

Pulmonary tuberculosis or conditions rendering antituberculous observation and hygiene advisable were present in 6 percent of this group.

In this group of pulmonary cases 31 percent showed very slight physical signs, possibly of no significance; 51 percent showed more pronounced physical signs that are associated with unfavorable constitutional symptoms, but no positive diagnosis was made; 18 percent showed more advanced conditions than the above, and might be classified as frankly tuberculous.

Only 8 percent showed malnutrition and underweight; and 13 percent showed gross overweight and overnourishment.

Mouth infection stands out as one of the most serious conditions in this group, and it may well be that much of the circulatory and renal impairments are due to this cause.

It would be strange indeed if a thorough physical examination did not reveal a high percentage of impairments in a group showing such a large proportion of focal infection.

Entirely apart from carious teeth, 55 percent showed evidences of pyorrhea or Riggs' disease, and many of these cases were of the advanced type. The conditions found raise the question as to the possible communicability of this disease. If the ameba buccalis be the offending organism, the spread of this infection through the common drinking cup should be considered. Men in this group were instructed in the perils of the common drinking cups, and were urged to use individual cups, but common cups were furnished at the water coolers supplied in the factory proper, although drinking fountains were employed in the general offices.

The fact that 54 percent showed serious errors in diet and 50 percent showed other serious errors in personal hygiene shows the opportunity for improvement along these lines through simple instruction in diet reform and personal hygiene.

The fact that 69 percent were found in need of some form of medical treatment or guidance and that only 10 percent of this number were aware of impairment shows the opportunity offered to preventive medicine by this health survey.

This paper is offered as a preliminary study only, as the examinations have only recently been completed and there has not been an opportunity to study fully the relationship of the various impairments. The following items are, however, of interest:

1. Number using alcohol, 578; of this group 383, or 74 percent, have urinary or circulatory impairment.
2. Number of non-users of alcohol, 492; of this group 336, of 68 percent, have circulatory or urinary impairment.
3. Number with infected gums, 552; of this group 435, or 78 percent, have urinary or circulatory impairment.
4. Number not having infected gums, 448; of this group 283, or 63 percent, have circulatory or urinary impairment.
5. Total number with mouth infection, 695; of this group 547, or 78 percent, have circulatory or urinary impairment.
6. Number using tobacco, 764; of this group 545, or 71.35 percent, have mouth infection; 446, or 58 percent, have circulatory impairment.
7. Number non-users of tobacco, 236; of this group 118, or 50 percent, have circulatory impairment; 150, or 63.55 percent, have mouth infection.
8. Number overweight (15%), 180; of this group 138, or 76 percent, have urinary or circulatory impairment.

It may be stated, with considerable confidence, that the prominently unfavorable conditions and influences appearing in this group are: over-nourishment, ill-balanced nourishment, alcohol, tobacco, mouth infection and other focal infections.

Taking the average age of the group into consideration, it does not radically differ in the matter of the number and degree of impairments from other large groups in totally different occupations; the occupational influence *per se* is a minor factor. This becomes evident when we compare the results of examinations of commercial groups in New York City. The percentage of tuberculous subjects is somewhat higher than we have found in commercial groups, and this, of course, may be due to the fact that many of these men, in the course of their work, are exposed to mineral dust, although this condition is present in a pronounced degree only in certain departments.

The percentage of mouth infection and of nose and throat infection is higher than in the commercial group; likewise, the percentage of arterial and renal impairments. This gives emphasis to the importance of mouth infection and other focal infection arising in the head as factors in causing these cardio-vascular-renal diseases. An interesting point is a fact that the use of tobacco does not, as

some have claimed, apparently protect against mouth infection, but according to the evidence seems to lower the resistance to infection. The percentage of organic heart disease is much lower than in the commercial groups, but this may be due to the fact that these men were physically examined for this trouble before employment.

The group, as a whole, may be regarded as an average group of its class, and the large number of impairments found simply reflects average conditions. To those who are satisfied with such average conditions this work will not appeal. Nor will it appeal to those who believe that man has reached the pinnacle of his physical, moral and social development. Neither will it appeal to the *laissez aller* standpatter, who believes that we should consider everyone healthy until he breaks down, who believes that the conditions causing death from apoplexy and nephritis arise in a night and have no small beginnings, who ignore slight arterial thickening, slight albuminuria, moderate rise in blood pressure, and other danger signals, until frank pathological degeneration makes its appearance.

To those who believe in human progress, who look forward with confidence to a better state of affairs for the human race, these facts will be accepted not in discouragement but in hopeful interest as evidencing the tremendous opportunities for effecting such improvement.

WAR HAS NOT INCREASED PRICES

Staples Used in Hospitals Are Just About Where They Were a Year Ago

The purchasing committee for the state hospitals for the insane, consisting of Dr. E. H. Howard, M. C. Ashley, R. H. Hutchings, and Stewards C. S. Pitcher and George F. Watson, has just completed an extensive opening of bids for three months' supplies for the state hospitals under the system of joint purchase perfected by the state hospital commission.

The bids ranged in volume from 13,000 barrels of flour and 1,250,000 pounds of beef to the quarterly supply of salt required.

The committee found that the war had not, as feared, seriously affected the prices of the staple articles comprising hospital dietaries. The commission is paying this year $58,895.84 for 12,887 barrels of flour, as against $58,771.73 for 12,211 barrels contracted for in 1914.

In farinaceous foods, comprising the large items such as rice, beans, peas, hominy and rolled oats, the prices were found to be materially lower.

In meats an unexpected development was, that contrary to the recent past, the supply of domestic beef was apparently greater than heretofore, as better figures were obtained than those quoted for Argentine beef, quantities of which the committee has recently bought by reason of its more reasonable price.

First Aid

She had attended the ambulance classes and obtained the certificate. The street accident she had earnestly prayed for took place. A man had broken his leg. She confiscated the walking stick of a passer-by and broke it into three pieces for splints. She tore her skirt for bandages. When all was completed she summoned a cab and took him to the hospital. "Who bandaged this limb so creditably?" inquired the surgeon. "I did," she blushingly replied. "Well, it is most beautifully—most beautifully done; but you have made, I find, one little mistake; you have bandaged the wrong leg."—*The Medical Pickwick.*

SOCIAL HYGIENE VENEREAL DISEASES

Conducted by WILLIAM F. SNOW, M. D.,
General Secretary, The American Social Hygiene Association,
105 West Fortieth Street, New York City.

Influence of Syphilis Upon Insanity and in Marriage

More than one-eighth of the cases of insanity annually admitted for treatment to Michigan state hospitals for the insane are directly caused by syphilis. Syphilis is the cause of every case of paresis, the most severe and uniformly fatal form of mental disorder which is treated in any considerable number in hospitals for the insane. In addition to paresis there are annually treated a small number of cases of insanity which are due to various other severe pathological changes in the brain produced by syphilis. In the year 1913-1914 insanity resulting from syphilis constituted 12.9 percent of all cases admitted to the Michigan state hospitals, and formed the third group in point of largest numbers. It was the direct cause of insanity in 17.5 percent of all males and 6.65 percent of all females admitted.

In order to ascertain the general prevalence of syphilis among the insane in institutions a systematic use of Wassermann's test was made in 1,546 patients admitted during the year 1913-1914. In 21.6 percent of 940 males who were tested there were obtained positive reactions, and an additional 3.6 percent were strongly suggestive of the presence of syphilis. In 74.8 percent of the males the test was negative. Among 606 females who were tested positive reactions were obtained in 12.7 percent. Of all admissions 18.1 percent gave positive reactions, 4.17 percent were questionable and 77.2 percent were negative in their reactions. It is thus shown that besides those admitted for paresis and cerebral syphilis there was a considerable percentage of others who have syphilis, although they may be admitted with some other type of mental disorder. During the past 24 years the proportion of cases of paresis has varied among the males admitted to the state hospitals for the insane from 11.1 percent to 17.5 percent, and among the females from 2.1 percent to 6 percent. Within recent years the disease has become more frequent among the total number of females annually admitted.

In its indirect effects syphilis is of extreme importance. Not only is it responsible for the insanity of the patient, but a high percentage of the conjugal mates become infected by the patient or are the source of his infection. It is also responsible for the reduction of the birth rate in the families of the paretic and for a severe impairment of the nervous and physical health of their descendants. Dr. R. H. Haskell, of the State Psychopathic Hospital at Ann Arbor, reporting the results of a study made by him on the influence of syphilis and paresis upon the conjugal mate and children of the infected individuals, says:

"Among 53 married individuals who were diseased with paresis there were 17 or 32 percent of instances in which the wife or husband was infected with syphilis as shown by the Wassermann test. This figure, though high, must not be taken as representing the whole situation. One

wife acknowledging a severe infection had had careful treatment and presented a negative reaction at this time. The first wife of a patient, whose second wife now has a strongly positive reaction, herself died of syphilitic disease. In the case of two female paretics, one husband also has paresis and the other died recently of locomotor ataxia. Since both of these diseases are syphilitic in nature they should be added to the total. There are numerous other factors which might tend to swell this figure, but adding only these definite cases one finds in 55 paretic patients a total of 21 mates infected with syphilis.

"Separated into sexes, we find that in 49 cases where the husband is paretic, 17 wives are infected with syphilis; in six cases where the wife is paretic, the husband is infected four times.

"While these figures are high, they are not greatly higher than other investigators have found, and as already suggested probably underestimate rather than exaggerate the true situation. In one study, that of Plaut and Goering, it was found that the other mate showed a positive reaction in 32.6 percent of 54 cases of paresis, while in our cases the proportion is 38.18 percent.

"Unfortunately we have not yet been able to perform the Wassermann reaction upon a sufficiently large number of children of our patients to warrant drawing conclusions from them. It may suffice to say that Plaut, in the same investigation referred to, found 26 among 100 children in these same families to show a positive Wassermann reaction. Forty-five of these same children showed some defect in their physical or mental makeup, although, as a rule, they were intellectually well gifted.

"We have also been able to collect 86 cases of married paretics where the anamnesis concerning matters of family life was definitely dependable to allow the drawing of conclusions concerning the matter of sterility, abortions and total number of living born children. The situation is set forth in the following table:

CHILDREN OF MARRIAGES OF PARETICS

	Total No.	Sterile Completely	Abortions only	Total No. Abortions	Living Born Children
Male general paretics.....	76	22	10	41	110
Female general paretics...	10	6	1	1	13
Total	86	28	11	42	123

"This table shows that of 86 marriages 39 or 44.8 percent were absolutely childless at the time one of the two mates came into the hospital with paresis. The average number of living born children in this whole group is 1.4 children to each family. If we subtract from both totals of marriages and total number of children two cases with unusually large families of 10 and 12 children, respectively, we find the average number of children brought down to 1.2 per family. If we consider only those families with living born children we find an average of 2.24 children per family.

"But study of these histories shows that at the time the paretic parent entered the hospital 20 of this extremely small total of 123 children had already died. Usually these deaths were in early infancy, as in the following illustrations: One immediately and one at the end of the first day; one at the end of first week and the other of hydrocephalus at five months; one of spasms at five weeks; one of convulsions in early infancy. Subtracting this number of 20 children already dead and omitting the two distinctly unusual families we find at the time the patients enter the hospital with paresis a total of only 81 living children among 84 families or less than one living child per family.

"These observations, showing that 38.18 percent of the mates of paretics have syphilis; that the children to a large number show either evidences of hereditary lues or signs of congenital weakness, either physical or mental; that the proportion of living children is far below the average and the number of childless marriages is abnormally high; together with the findings of Salmon, that general paralysis in New York State stands eighth in the mortality tables and that one out of every nine male deaths between 40 and 60 is from general paralysis, should give some insight into the magnitude of general paralysis as a public health problem."

The City Mothers' Bureau of Los Angeles, Cal.

Los Angeles was one of the first cities in this country to employ police women, an experiment which has attracted much attention and seems to have been successful. The city is now trying out another new plan in its City Mothers' Bureau, consisting of ten women appointed by the chief of police, to confer with, advise, and assist the police department. Mrs. Aletha Gilbert, who has charge of the bureau, is one of the police women and has had some twenty years' experience in active police work; the other members of the bureau serve without pay.

The work undertaken is intended to be preventive rather than reformatory, to keep out of the courts boys and girls who are guilty of misdemeanors or who seem likely to become juvenile offenders, to be of practical assistance to parents and children, where sons and daughters are slipping away from parental control, or where parents are proving incapable of administering to the welfare of their offspring. To accomplish this cases are investigated, and advice and counsel given confidentially both to the children and to their parents. Backed by the official standing of the bureau such help carries with it a peculiar kind of authority. It will be the policy of the bureau to report first offenses to the home instead of to the court, to care for wayward girls by placing them, when possible, in private homes, and to find employment for those who wish it. Motherless girls, and girls away from home, or those whose home conditions are not conducive to their development are the especial care of the bureau. All such are invited to bring their perplexities to the City Mothers. Another duty of the bureau will be the supervision of public dance halls and other public places of amusement. Municipal dances are also being arranged under the chaperonage of the City Mothers. An industrial school for girls is projected, advice and help are given to women whose husbands have deserted them; careful attention is being given to the new problem presented by the groups of boys and girls who are employed by the moving picture companies. The bureau has apparently succeeded in putting out of business "pennant stands" where girls were in charge and dice shaking permitted. The Mothers wear an official badge as the symbol of their municipal authority. No definite limits are placed upon their activities and their work seems likely to be extended in many directions. A committee of school women is in cooperation with the City Mothers in discovering contributory causes of juvenile delinquency and in consideration of needed remedial legislation. The strictest confidence is maintained with regard to all details of the work. Legal protection is assured to all those who stand in need of such protection, though none of the machinery of the law is in evidence. The office of the bureau is located away from other departments of the city administration and is practically as quiet and unobtrusive as a private home.

The Star and Garter Hotel, on Richmond Hill, London, Given to British Red Cross Society

The members of the Auctioneers' and Estate Agents' Institute of the United Kingdom have purchased the Star and Garter Hotel for $107,500, and have presented it to the Queen as a permanent home for paralyzed and totally disabled sailors and soldiers. Her Majesty has transferred the buildings, terraces, gardens and grounds to the British Red Cross Society. The society has undertaken the responsibility of equipping and maintaining the institution.

Inasmuch as the Star and Garter has, for some years, been departing from hygienic efficiency, and in the light of experience with another large hotel in Belgravia, where thousands of pounds were spent in freeing the kitchens and basement from the cockroach, insect and rat curse, the editor of *The Hospital* is not certain whether to consider this hotel "a white elephant" or a gift.

DISPENSARY AND OUT-PATIENT WORK

Conducted by MICHAEL M. DAVIS, Jr.,
Director of the Boston Dispensary

New York's New Health Center

The Commissioner of Health of New York City, so widely known in the hospital world, Dr. S. S. Goldwater, has established as a distinctive contribution to public health service his "Health District No. 1" in the heart of the lower East Side. His aim, as stated in the report of the first three months' work, was twofold:

I—To test the value of local administration of the functions of the health department, especially with a view to prevent overlapping of service.

II—The development of a community spirit with respect to health affairs in that district.

This experiment will be of great interest to all concerned with dispensary work as showing how activities in behalf of the public health can be coordinated and how a large organization such as the New York City Health Department might improve its service through emphasizing the principle of local administration for local purposes.

Quarters, including the basement and first floor of a five-story apartment house, were taken at 206 Madison street, and an area of twenty-one city blocks was marked out, taking in about sixty-three acres and some 35,000 inhabitants, most of them Russian or Austrian Jews. The rooms in the basement are used for the purposes of a milk station with a baby clinic, conference room, room for weighing the babies, and a dressing room. Upstairs the four rooms are used for the offices of the doctors, nurses and cooperating agencies, the record files and maps of the district, and charts, pictures and literature.

The field work undertaken from this center for this district includes the following: infant milk station, prenatal work, supervision of midwives and foundlings, medical school inspection, so-called "pre-school" examinations (children under school age), supervision of tuberculosis and of certain other infectious diseases, food inspection, sanitation and public health education through the distribution of literature, arrangement for lectures, and conferences in the Center or in halls in the district. "Healthgrams" are posted on a large bulletin board outside the building and are changed every week. The staff of the Center includes a health officer who is in administrative charge of all the work in the district; a medical inspector who provides the medical service for the milk station, medical school inspection and the examination of children between infancy and school age; three nurses and a nurse's assistant, a food inspector and a sanitary inspector. The health officer and the medical inspector give a considerable part of their time but not all their time; the food inspector about half his time, and the sanitary inspector gives one or two hours a day to work in the district. The various bureaus of the health department, such as child hygiene, preventable diseases, food inspection, sanitation, etc., send their supervisors into the district to see that the work for their respective bureaus is properly performed and held up to the technical standard of efficiency.

While one nurse has been detailed to supervise the infectious disease records, and another nurse is responsible for the conduct of the work in the milk station, yet all three nurses are performing routine service in the milk station clinic and in the schools during the morning hours. In the afternoon they perform the field service, each nurse being assigned a section of the district, making the necessary visits therein. These visits include those to milk stations and infants, follow-up visits to school children, midwives, foundlings, tuberculosis cases and other infectious diseases.

The experiment has proven the feasibility of having nurses perform an all-round public health nursing service, provided it is under the immediate control of a medical man, such as a health officer, in a relatively small district. The medical work should be supervised by medical officers and not by nurses. Furthermore, each district nurse will in time become familiar with the sanitary conditions of her territory and the health status of the families living therein. Several times a nurse has at one visit interviewed a family in which the father has tuberculosis, the child under observation for some physical defect and the mother with her baby is a patron at the milk station. The district nurse viewing thus the family and its environment learns the close relation of health and social conditions. Formerly, each one of these people would be visited by a different nurse, which was not only an annoyance to the family, but involved an overlapping of service, which should be eliminated. Living in this district are children going to schools, which, in the former distribution of school groups, were served by seven nurses.

Those interested in visiting nursing service or in hospital social service will follow the succeeding analysis eagerly, noting the extent to which the same nurses fulfill more than one health function:

ANALYSIS OF NURSES' VISITS

By staff of 3 nurses; 2,280 visits in 1,475 houses
In 991 houses 1 health function was served at 1 visit
In 301 houses 2 health functions were served at 1 visit
In 106 houses 3 health functions were served at 1 visit
In 44 houses 4 health functions were served at 1 visit
In 19 houses 5 health functions were served at 1 visit
In 14 houses 6 or more health functions were served at 1 visit

Total, 1,475 houses

The following analysis of the nursing service is also interesting. Calculating all work performed for any function, school medical inspection required the greatest portion of the time of the nurses, with the milk station work next. Infectious disease service would have been greater than 16 per cent had the time required to prepare reports and supervising records been included, but this item was charged against office duty or against milk station service. During March economy of time was effected by giving the task of supervising these records to the milk station nurse, who could do this in the first morning hour when clinic work was very light. This si another instance of how time can be saved by the district plan.

Analysis of the field work shows about 50 per cent of the time was devoted to infectious disease visits because at this season of the year this service is comparatively heavy. In the summer months the infants' welfare work will probably consume the greatest amount of field time.

While the work of the first three months is necessarily only a beginning and results cannot yet be announced, the Health Center report summarizes the following points which are believed to have been already demonstrated through this experiment:

1. To the inhabitants of the district the work of the

health department has become concrete; the district office is recognized as a place to which they can come for guidance in public health matters.

2. The entire district staff develops an interest in and a knowledge of the general health of the community, surpassing present methods by bureaus.

3. Many inter-bureau affairs can be adjusted directly at the district office without the delay involved in their reference to general headquarters.

4. Local direction by a health officer permits distribution of service according to district needs.

5. The cooperation between the medical and the nursing service is improved and secures better results.

6. Nurses working together in a common field develop greater enthusiasm and interest in health work.

7. Nurses can be trained to perform satisfactorily, an all-round health service.

8. The nursing staff is elastic, that is, it can be concentrated on infant welfare, schools, infectious diseases or other service, as conditions or seasons of the year demand.

9. The interest of the people in the exhibits and the literature shows the possibilities of a systematic health education campaign.

10. Civic organizations and public-spirited individuals are ready to aid the health department in developing a community health program.

Those interested in general dispensary work, or in special dispensaries for babies, tuberculosis, etc., will do well to secure a copy of the Report on Health District No. 1, which may be obtained from the secretary of the Department of Health, Walker and Center streets, New York City.

Tuberculosis Clinics for the Middle Classes

The *Journal of Outdoor Life* for July, 1915, the organ of the Anti-Tuberculosis Campaign, published an editorial on "Pay Clinics for Tuberculosis." Referring to the evening pay clinics established for certain diseases, such as eye diseases and venereal diseases, the editorial says that this is most significant for anti-tuberculosis workers, in that it suggests a similar line of approach to a very difficult problem.

One of the most difficult groups of cases which the anti-tuberculosis worker, has to handle is that group which is commonly miscalled the respectable middle class, consisting of the wage-earners who are getting salaries ranging from about $15 to $25 per week up to about $2,000 per year. Patients in this group, when they become afflicted with tuberculosis, hesitate to go to a strictly charitable institution, whether they are obliged to pauperize themselves or not. On the other hand, they are generally unable to pay for the cost of maintenance at a private commercial sanatorium, which is compelled, as a business necessity, to charge rates ranging from $15 to $50 per week. The alternative is the comparatively small group of semi-philanthropic institutions, such as the Adirondack Cottage Sanitarium, the Loomis Annex, Agnes Memorial Sanatorium and Sharon or Stony Wold Sanatorium for Women. These institutions charge moderate rates, ranging from $7 to $12 per week, and are compelled on this account to solicit the difference between these sums and the actual cost of maintenance in contributions from the general public. The number of such institutions, however, is woefully inadequate to care for the class of patients who wish to go there.

A similar difficulty exists with reference to medical care and attention in the home. The patient who has absolutely no resources does not hesitate, when the way has been pointed out to him, to go to a clinic and be examined without charge. The patient who is earning a moderate wage, on the other hand, and who is able in some cases to afford a family physician, is loath to go to an institution where he feels it is lowering his self-respect. If he could go to a dispensary and pay a moderate amount within the limits of his income, he would not hesitate to do so.

In connection with the evening pay clinics established at the Boston Dispensary, it was found that there were four general lines of facilities available to the class of patients reached. These four lines of facilities are equally available to the tuberculosis patient and they are: (1) private medical practice; (2) hospitals and dispensaries; (3) irregular medical practice, including advertising experts, quacks, "institutes," etc.; and (4) self-treatment by use of drugs which the patient buys through mail solicitation or in response to advertisements from the corner drug store. The tuberculosis patient of the class to which reference has been made cannot, under all circumstances, afford the regular fees of specialists in tuberculosis and he refuses to go to a dispensary. If, as is frequently the case, the family physician is incompetent to diagnose or treat the tuberculosis which the patient develops, the patient gradually sinks to that condition where ultimately he is forced to accept either the charity of the community as a whole, or the generosity of his friends.

For this group of patients a pay clinic, where the ambulant cases could be examined at regular intervals, with a group of pay nurses who could visit the homes frequently, would be most desirable.

The fees which the patients pay at the clinic and to the nurses or physicians at home should not exceed those for an ordinary visit of a family practitioner in a small city, say about $1.00 per visit, and possibly, where the visits are frequent and extended, not more than 50 cents.

The experience of the Boston Dispensary has demonstrated three things: first of all, that pay clinics can be made self-supporting; secondly, that there is a real demand for this kind of service; and thirdly, that if the service is rightly organized, little or no opposition on the part of the medical profession will be provoked. Whether this experience in the special group of diseases tried out in Boston will be applicable to tuberculosis remains to be seen. The *Journal of the Outdoor Life* makes this suggestion, however, in the hope that some anti-tuberculosis associations will have the daring to try it out.

The Bible and the Doctors

The book of Chronicles is rather severe on the doctors. It says:

"And Asa, in the thirty and ninth year of his reign, was diseased in his feet, until his disease was exceeding great; yet in his disease he sought not to the Lord, but to the physicians. And Asa slept with his fathers."

In Ecclesiastes, on the contrary, is a more encouraging opinion:

"Honor the physician for the need thou hast of him; for the Most High hath created him. The skill of the physician shall lift up his head and in the sight of great men he shall be praised. The Most High hath created medicines out of the earth and a wise man shall not abhor them."

Then, however, comes another blow:

"He that sinneth before his maker shall fall into the hands of his physician."—*Harper's Weekly.*

The Illinois State Board of Administration in conference with Dr. C. St. Clair Drake has been seriously considering the fixing of standards for maternity hospitals. A systematic inspection of these institutions has been undertaken by the board.

LETTERS FROM OUR FIELD EDITORS

News From the Pennsylvania Field

NEW AMBULANCE

The city of Doylestown was presented with a beautiful ambulance in memory of Dr. O. P. James, a former eminent practitioner of Bucks county, by his daughters, Miss Sara H. James and Mrs. George H. Lorah.

RESEARCH LABORATORY ENDOWED

The Allegheny General Hospital, of Pittsburgh, has been the recipient of an endowment of $400,000 for the construction, equipment and upkeep of a laboratory for scientific research. The donors of this useful gift are the children of William H. Singer, of that city.

BACTERIOLOGIST HONORED

Dr. John A. Kolmer, of the University of Pennsylvania, who has given so much of his time to the study of contagious diseases and who is now chief bacteriologist and pathologist at the Municipal Hospital of Philadelphia, had the degree of Master of Science conferred upon him by Villa Nova College at the last commencement in June.

INVESTIGATION OF OCCUPATIONAL DISEASES

The United States Public Health Service has detailed Dr. Joseph W. Schereschewsky to assume charge of the Marine Hospital at Pittsburgh for the purpose of making a complete investigation of those occupational diseases most common to miners and the manufacturing establishments of that locality.

For the purpose of pursuing this work Dr. Schereschewsky, who has already contributed many scientific reports to the service, will be given five assistants, and the investigation will include the physical examination of workers, and the chemical, physiologic, and bacteriological study of the diseases encountered.

Special efforts will be made to determine the effects of heat and light on mill workers by the action of infra-radiation, which has been already stated to be the cause of glass-worker's cataract.

ANOTHER LEPER HOUNDED

The necessity for the establishment of a leper hospital in this country, as advocated by the United States Public Health Service, is again strongly emphasized by the treatment accorded in Wilkes-Barre to one Joseph Norman, who was declared a leper, and since that time has been under strict quarantine.

As though this man were a wild, ferocious animal, he has been enclosed, by order of the city commission, within a small area bounded by an eight-foot fence. It is almost inconceivable that in this age any human being should be so treated by his fellowmen, and such treatment is a reflection upon the intelligence of the community.

PUBLIC SCHOOLS TEACH HEALTH RULES

The public schools of Philadelphia, beginning this session, propose to suspend the teaching of physiology for the purpose of substituting therefor a course in public health, and at the end of the term a test will be made to determine not how much the children know, but how their knowledge has been effectually applied in building up their own bodies and correcting unsanitary home conditions. The new course is elementary, and nothing will be taught that cannot be immediately applied.

TYPHOID FEVER PREVALENT

As is usual at this time of year when children are returning from vacations, picnics, etc., there have been reported a great many cases of typhoid fever in the city during the last few weeks. Up the state, at Pittston, an unusually large number of cases have been discovered, and it is said that that epidemic has been traced to the milk and water supply. At the Danville Hospital for the Insane there are said to be about twenty cases of typhoid fever among the patients and nurses. As both the milk and water, after very careful investigation, have been declared pure, it is believed that a carrier is the cause of the disease, and efforts are being made to discover the person.

ANNUAL STATE MEDICAL CONVENTION

The Medical Society of the State of Pennsylvania held its 65th annual session at the Bellevue-Stratford Hotel, Philadelphia, from September 20 to 23. Elaborate preparations were made for the entertainment of the guests, and a most excellent scientific program was provided.

PHYSICAL EXAMINATION FOR WAITERS

The Department of Health of Philadelphia has announced that beginning January 1, 1916, every worker in a restaurant or hotel will be compelled to undergo a physical examination to determine his or her freedom from infectious diseases. This examination is in conformity with an act of the legislature passed at the last session.

DEPARTMENT OF HEALTH CHANGES

After several years of sparring between city councils and the Department of Health, the new housing division of the Bureau of Health has been at last organized by Director Ziegler, and appointments to all the positions created by the legislature have been filled except several that must await civil service examinations.

CHILDREN'S HOSPITAL CAMPAIGN

The Children's Hospital, of Philadelphia, announces that it will commence a half-million-dollar campaign during the month of October for the purpose of obtaining the necessary funds to complete the new hospital, which is now in course of construction. The new out-patient building is about completed, but until more funds are at hand further progress cannot be made. It is hoped that the campaign will solve all the financial difficulties.

W. H. WALSH.

News of Rocky Mountain Hospitals

In our last letter we spoke of the increasing demand for a larger and more suitable building for the Children's Hospital of Denver.

We are pleased to note here that the new building which the Board of Directors of this hospital have had under consideration is now very nearly a reality, owing to the hard work of all interested in this institution and the never-failing generosity of the citizens of Denver.

In July a campaign was carried on in behalf of the Children's Hospital, the purpose being to realize $250,000 in twelve days. During these times of war this seemed almost impossible, but nevertheless it was accomplished. The campaign was carried on systematically, and all who

were able to give even a small amount were more than glad to do so to help in the relief of the sufferings of little children.

We also spoke in our last letter of the general and insistent demand on the part of the medical profession of Denver for the erection of an up-to-date medical building to take the place of the old one now occupied by the City and County Hospital of Denver. A bond issue of half a million dollars for this purpose was voted on by the Denver taxpayers at the last election. However, owing to the fact that so many bond propositions were presented at the same time they were all defeated.

The Sanatorium of the Modern Woodmen of America, located near Colorado Springs, is constructing a new administration building.

The Fortieth Annual Report of St. Joseph's Hospital of Denver is exceedingly interesting and very attractively compiled. We are sending this report from which you may cull such "news data" as you see fit.

M. COLLINS, M. D.

MILWAUKEE OPENS NEW $600,000 SANATORIUM

Plant of Strictly Modern Construction Has Accommodations for 285 Patients

Milwaukee's new county tuberculosis sanatorium, erected at Wauwatosa, a suburb of Milwaukee, at a cost of $600,000, is expected to be ready to receive patients October 1. The institution will be known as "Muirdale," having been named for John Muir, the Wisconsin naturalist.

The plant of the sanatorium consists of an administration and infirmary building, three stories high, with accommodations for 205 patients, two cottages with a capacity of 40 patients each, a superintendent's residence, a home for male employees, a home for female employees, a home for the assistant superintendent and interns, and a power plant.

The interior of the infirmary is of white enamel. There is not a dark corner in the building, and sunshine and light penetrate to all parts of the building. The corners of the rooms and corridors are beveled, so that there is no crevice into which dust or dirt can accumulate. The windows are of astral design, so that only 5 percent of air is prevented from entering the building. In the center of the building and on both sides are the sun parlors, divided by glass folding door partitions to prevent drafts. Windows run from the floors to the ceilings. The floors are tiled and the corridors are bisected by doors every four or five feet, making access as convenient as possible.

Large dormitories run through the entire building. Not more than six patients will be allowed to sleep in them. Other rooms will accommodate four patients, while those in advanced stages will have individual sleeping rooms on the third floor. The building is situated on the highest part of the fifty acres of land surrounding the institution and presents a beautiful view. A large lake is being constructed below the buildings for the pleasure of patients in the summer time. The bed of the lake is artificial and it is supplied by natural springs of water.

The institution will be in charge of a new central board of five trustees, which has charge of all county institutions. Dr. G. L. Bellis is the superintendent. Dr. Bellis was formerly head physician at the Cook County Hospital, Chicago, and assistant superintendent of the Wisconsin State Sanatorium at Wales.

Construction work on an addition to the hospital of the Indiana Soldiers' Home at Lafayette will be started soon.

QUERIES AND ANSWERS

Wet Versus Dry Sterilization

To the Editor of THE MODERN HOSPITAL:

The old question of "dry" versus "wet" sterilization of rubber gloves has come up in our hospital, and we are wondering whether there is anything new in hospital practice that has been developed within the past two or three years that would make us think of changing from "wet" to "dry" sterilization. A SURGICAL NURSE.

There is nothing that we know of that has developed in the last two or three years that would cause you to change from wet to dry sterilization of rubber gloves. We still think that gloves sterilized by the wet process, that is, steam or boiling water, will wear longer than if the far higher temperature were employed in dry sterilization. You undoubtedly understand thoroughly the method of wet and dry sterilization and there is no reason to go into that.

Slow Burning Hospital Construction

To the Editor of THE MODERN HOSPITAL:

We have money enough to build a new hospital of forty beds if we build of what the architect calls strictly fireproof construction; or we have money enough to build a sixty-bed hospital if we can use what our architect calls "slow burning" material. We have a worked-over frame dwelling house, which we now occupy with our 25 beds. What does THE MODERN HOSPITAL think we should do?

T. W. M., Ohio.

You should by all means build your forty beds of strictly fireproof construction and continue to use your old hospital of 25 beds as an annex until you can afford to take it down and add a new wing, which should also be of strictly fireproof material. You have no right to hazard the safety of patients by admitting them to a fire trap, and anything short of absolutely fireproof construction is a fire trap, where sick people are concerned.

It is pardonable, though not advisable, to continue the use of your present old building until you can afford to tear it down and build a new; in fact, that is exactly what you are doing now. It is unfortunate that you are obliged to do so, but it is merely unfortunate; it would be a crime to build a new building of this sort of material.

Division of Intern Work

To the Editor of THE MODERN HOSPITAL:

We have four interns, and there are constant wrangles about who shall do what; very often when an intern is called on to do a certain thing he refuses, claiming that it is not his work, and each intern seems to think he can make his own rule to fit each case. The doctors are constantly finding fault because their work isn't done, and the interns think they are the most abused mortals in the world; how can we arrange things so these frictions and misunderstandings will cease? SUPERINTENDENT.

Nearly every hospital now has definite rules for the conduct of its interns, and the work of the hospital is divided under these rules so that each man knows exactly what is expected of him. The details of rules must be

made for each hospital, because conditions differ; the division of services has a little to do with it as well as the number of interns and the character of work that the hospital does. If you have no such rules you should get your medical staff to help you create them. THE MODERN HOSPITAL will be glad to send you a general form if you have none available, and you and your medical staff can make such changes as will meet your particular requirement. After you get your rules, have them passed by the medical staff and by the board of trustees, and then it will be your duty as superintendent to see that they are lived up to.

There will always be trouble about the work of the interns unless there are definite and enforceable rules for their guidance, and rules will be of no earthly account unless the interns are compelled to obey them. You had better start your new set of rules, if possible, when your new men come in, in the spring, because if they are now running without rules, it will be extremely difficult to enforce new ones in the middle of the service of a group of men, and usually the installation of a new set of rules means the dismissal of one or more interns for disobedience.

Pupils on "Special"

To the Editor of THE MODERN HOSPITAL:

How much total time during her three years' course does THE MODERN HOSPITAL think a pupil should, with fairness to all concerned, be assigned to "special" in the hospital on private cases, for which the hospital collects a fee of $15.00 per week? And at what stage of her career should she "special"? Our pupils have been assigned to "special" for only short periods, a week or two at a time, and perhaps two or three-times during their junior year, not much more during the intermediate, and about half their time during their senior year.

A TRAINING SCHOOL PRINCIPAL.

You should not "special" your pupil nurses during their junior year and charge patients for their services; young women at that stage of their training are not equipped for this work, and it is almost taking money under false pretenses for you to charge patients for their service. The same thing is almost true of intermediate class pupils, although we think it good practice for second-year pupils to be given as direct charge of individual patients, under proper direction, as possible; but intermediates should "special" in the wards, where they can be constantly under the direction of the head nurse, and not in the private rooms.

One-half the time of a senior pupil nurse seems a great deal for "special" work; we know it is done, but it is to be doubted whether even those who practice this method would contend that it is in the interest of the pupil. Of course, it is in the interest of the hospital to "special" as many of its pupil nurses as it can, in order to earn the money; but it does seem that if, say, three months out of the twelve of a senior pupil's year is given to "special" service, that would be enough.

There is a certain advantage in having senior pupils on "special" in the hospital rather than outside graduate nurses. Graduate nurses resent the direction of the head nurses in the hospital and insist on running their cases, subject only to the doctor's orders; and often these orders do not cover the ordinary administrative technic with patients; hence graduate nurses are left pretty much to themselves, and after a short time they get away from the technic of the hospital and are disposed to establish a technic of their own—a practice subversive of discipline, against the best interests of the patients, provided the hospital's technic is any good, and tends to create in the hospital, and especially in the training school, a feeling that technic does not amount to much anyway.

When graduates come into the hospital on special duty they should be compelled to live up to the rules of the institution, literally and exactly, and refusing to do so, they should be refused work in the institution.

Outside Doctors in the Hospital

To the Editor of THE MODERN HOSPITAL:

Do you think the hospital should permit doctors having private cases in the maternity department to bring in their own nurses from the outside to "run" their labor cases? One or two doctors, who are not on the hospital staff, insist on doing so, and while we have protested, we have allowed it; recently we got a bad infection in one of these cases and the doctor blames the hospital, while we are quite sure it was due to the unscientific work of the outside nurse, coupled with sloppy obstetrics on the part of the doctor, who refuses to use gloves.

A GENERAL HOSPITAL.

You are correct in the stand you took in the first instance, and should never give way on the question of allowing outside nurses to run cases in your obstetrical department. The thing that has happened to you will happen again, and yet the hospital cannot absolve itself from responsibility for unwarranted infections in its operative departments. If the fact that you allowed an infection to get into your obstetrical department should leak out into the community it would hurt your service immeasurably, and would do your hospital far more harm than it would do the doctor whose patient was involved, or the outside nurse who took care of the patient. That fact seems to give the hospital a very vital interest in the integrity of its obstetrical service; and the hospital can never divide its responsibility for an untoward happening of that sort; therefore, why should the hospital permit either doctors or nurses to practice a technic that it does not approve or to perform service in the hospital, even on their own private patients, without a proper technic?

Some very good obstetricians, in very good hospitals, sometimes like their own nurses to run their private cases, provided the nurse has been trained in that particular hospital, and the doctor himself works under its technic; but even under these circumstances a private duty nurse, running a case in the obstetrical department, is a good deal of a nuisance and generally messes up things. She wants everybody waiting on her, wants the best of everything there is, and if permitted to do so will have the whole department upset over her case. So that it is much better for the head nurse of the department, with her own assistants, to run every labor case and then turn the case over to the private nurse after everything is over, including necessary attention to the infant.

By the way, you may make a little money and incur the friendship of an outside doctor who refuses to wear gloves and abide by your technic, but in the long run you hurt your hospital and do an injustice to your own well trained medical men in offering any encouragement in the community to the employment of an out-of-date, ill trained and untechnical operator. The idea is, that if a good hospital, which yours is supposed to be, refuses its facilities to a doctor in the community it will not take very long for the community to want to know the reason why, and when such reason is given, as you could give in the case like that above cited, it will not take the community long to find out that there are other doctors available who could give them better service, and that attitude of the community will be in the interest of the competent staff members of your hospital.

The State School for the Deaf and Blind at St. Augustine, Fla., is erecting a hospital building.

NEW INSTRUMENTS AND APPLIANCES

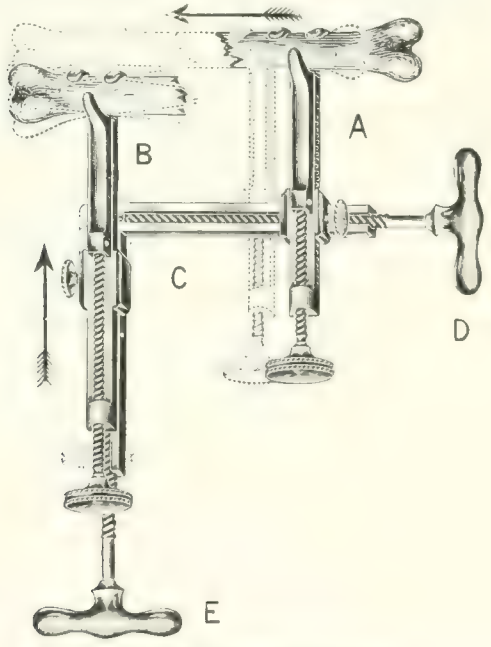
VINCENZ MUELLER, Technical Editor.
GEO. W. WALLERICH, Associate Editor.

Apparatus for Fractured Bones

BY WM. E. SCHROEDER, M. D.,
Chicago.

The instrument consists principally of three parts—an L-shaped arm, C, the two branches of which carry two carriages and two bone clamps. The removable carriages, D and E, are movable in two directions, one laterally and the other away from or toward the operator, as may be required. Mounted on the two carriages are two strong and adjustable bone clamps, which are modifications of the well-known Lowman clamp.

The illustration shows quite clearly the method employed in bringing the bone ends into apposition. The two fragments are grasped by the clamps, A and B, these



Schroeder Universal bone-clamp.

clamps then being attached to their respective carriages and held fast by means of heavy screws. Numerous anchoring points in the side of the clamps permit the thumbscrew to hold the clamps firmly with but little exertion on the part of the operator. By means of a worm gear actuated by hand grips each carriage, with the clamp attached, can be moved. Thus the bones can be brought into alignment whether they override or not, and in whatever position they may be. Immense traction can thus be had with very little effort, and once the parts are adjusted, they are held firmly together until plates, splints or grafts are applied or inserted. The instrument is made entirely of steel and can be taken apart easily for sterilization.

The Ziola-Jackson X-Ray Apparatus

The present extension of electrical service to even the smallest villages and hamlets has made the use of the x-ray tube possible to every physician and surgeon whose work calls for auxiliary assistance in this direction. In times past the installation of an x-ray tube, where coils, static machines, and kindred apparatus had to be depended upon, has meant excessive first cost, enormous maintenance costs, and extremely unsatisfactory service. The universal extension of electrical service has put the use of the tube on a new and better basis, a basis of comparatively low first cost, low maintenance, easy operation, and extremely satisfactory results. Under such advantageous conditions the range of use has been tremendously increased.

The commercial machines at present all embody the same fundamental principles of voltage and current trans-

Switchboard of Ziola-Jackson transformer.

formation from some commercial supply values to values required by the tube under all conditions of operation.

The x-ray tube requires a unidirectional current of high voltage and low amperage. The ordinary electrical service available to the hospital building is at potentials of 110 or 220 volts, and may be either direct or alternating current. The electrical apparatus that is most successful must be the simplest possible for the transformation of that current, direct or alternating, at low voltages, to direct current at very high potentials. The general principle is to supply a transformer with alternating current at low voltage, to rectify the transformer high-potential current to direct current, and to connect the power under these conditions to the tube through suitable controlling and regulating apparatus. The entire plant for current supply to the x-ray tube consists, where direct current is available, of a rotary converter, transformer, rectifier, and control apparatus. Where alternating current is available, the rotary converter is eliminated and a synchronous motor is used.

If alternating current is available no conversion is necessary before the current is supplied to the transformer, but if the supply is direct current, it is necessary to change this over into alternating current before connecting it to the transformer. Two schemes have been used for this conversion, both of which are in use today.

These two methods are the use of an inverted rotary converter, and the use of two machines, a direct current motor driving an alternating current generator. The rotary converter is in fact a special case of the two-machine method, where the two machines are combined into one.

The transformer used in the Ziola-Jackson apparatus is of the closed core type. The rectifier is mounted on the shaft of the rotary converter in the direct current system. Where alternating current is the supply the rotary is unnecessary, and therefore some other driving power must be provided. This is the synchronous motor, which operates in parallel and rotates at a speed which bears a direct relation to the number of cycles in the transformer current, and therefore in combination with a properly designed rectifying device may be depended upon to produce a direct current of maximum value. The device in this apparatus is capable of adjustment in correspondence with the wave form of the supply current of the particular city where the apparatus is to be used.

The control apparatus consists of proper starting devices for the direct or alternating current machines, according to the system, a polarity indicator and reversing switch for use with the alternating current system, a stabilizer for regulation of the supply to the tube, a milliammeter for the measurement of the tube current, and a final master switch for connecting into the tube leads.

The starting device for direct current is automatic and is actuated by throwing in the line switch. This operation starts the converter and thus feeds current into the transformer to be rectified properly later. In the alternating current system, the starting of the motor is accomplished in the usual manner, with the four-pole, double-throw switch. This provides only for the operation of the rectifying device. The transformer must be connected in by means of a separate switch. In the alternating current system, the rectified current may or may not be in the desired direction, and its direction as indicated may be reversed if desired by the polarity switch.

The stabilizer used for the regulation of the current and voltage values is an exclusive feature of the machine. Its use eliminates the ordinary wire rheostat and the choke coil. Eighty-six steps in the regulation are provided by forty-three contacts, and the degree of adjustment is extremely fine.

The milliammeter is mounted on lead glass above the operator at the switchboard. The advantages of such mounting can be easily seen.

The entire apparatus is assembled in two groups, one of which is enclosed in a mahogany finish cabinet, and the other of which occupies a steel and marble switchboard. The cabinet contains the transformer, mounted near the floor; the motor or converter, mounted directly upon the transformer; and the rectifying device. The stabilizer is entirely enclosed in steel, making it absolutely fireproof. The entire switchboard is on rollers in order to allow the operator to move it easily to any part of the room. A flexible cord connects the two groups electrically.

The recognition of the perfected design of the rotary converter, with subsequent elimination of its former disadvantages, was the first step toward the perfected machine.

Apparatus for the Administration of Warm Ether Vapor

BY DR. J. W. SNYDER,
Michigan City, Ind.

The apparatus devised by Dr. Snyder consists of two parts only: The well known wire mask and, attached to it, a dome-shaped metal casting, reaching part way down over the mask and the heating coil. The metal tube containing the electric heating coil may be quickly attached or removed from the mask by a slight turn to the right.

The coil, as may be seen from the illustration, is contained in a perforated metal shell and built for use on the regular 110-volt alternating current and so constructed that it will reach a maximum temperature and cannot become overheated even when connected for an indefinite time.

About twenty minutes before starting an anesthetic the coil is attached to the city current and the mask is prepared with layers of gauze. After the coil has reached the maximum heat it is connected to the mask, which is placed over the patient's face. The anesthesia proceeds then in the regular way except that the ether is dropped through the metal tube on the coil instead of on the gauze

Apparatus in use, showing thumb of left hand holding mask in position while the fingers support the jaw. The heavily insulated cord for connection to the city current is shown and also the manner in which ether is dropped through the coil.

direct, and from the coil it reaches the gauze in the consistency of warm vapor.

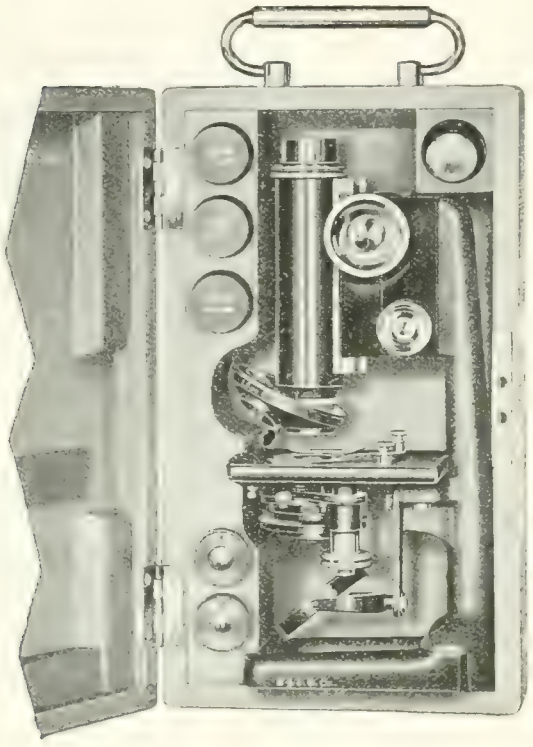
The ether is to be given more slowly and in smaller doses, inasmuch as it reaches the patient quicker than when it is dropped cold on the open mask. Consequently, the total amount of ether consumed during the course of an operation is only about one-half that used in the ordinary open method. The doctor claims that a number of other advantages result from the use of this device: the patients go to sleep more easily and without coughing or holding their breath; mucus is absent from the air passages, except in the extremely prolonged cases; anesthesia is easily maintained; patients are brighter upon awakening and post-operative nausea and vomiting are generally absent.

An American Made Portable Microscope

The Director of the International Health Commission, West Indies Division, actuated by the need of a microscope that would be thoroughly portable and strong, yet capable of exact work, commissioned the makers to design an en-

tirely new instrument. The various instruments available had been tried, but none had been found suitable. The commission required a microscope that was really portable—a "camping outfit." But the work of the commission is of a most exacting nature, and the director is a thoroughgoing scientist and a practical microscopist as well. Hence, the very first requirement: "Efficiency is to be in no degree sacrificed to portability."

The new microscope is not of the "knock-down" type. The only collapsible feature about it is the folding base. The instrument is ready for use as it is taken from its case; it is only necessary to unfold the base and to add the objectives. The objective is the most precise part of a microscope, and a good objective is a beautiful example



An American made portable microscope.

of the optician's skill; yet it should be made so as with proper care to last a lifetime. It cannot be expected to do so, however, if subjected to the jolts and rough usage it is likely to receive on a portable microscope. For this reason the objectives of microscope APS, when not in use, are always carried in their metal cases, which fit into receptacles provided for them in the carrying case. It was thought that this arrangement would insure at all times the careful handling which a good microscope objective deserves.

The new portable instrument is provided with screw sub-stage and condenser, the usual three objectives, and two eye-pieces. The side fine focusing adjustment is of the lever type, with two micrometer heads. The action is positive and there is said to be no lost motion whatever. The arm is a handle type of new design, giving ample space for the manipulation of the object.

It is argued that this instrument, designed for use in a tropical climate and used for exacting work under the most trying conditions, will give even better service in the hands of the regular physician. It weighs but 9¼ pounds in its carrying case, which is less than one-half the size of a regular microscope case. Portable microscope APS makes an excellent instrument for bedside diagnosis. The designers point out that this is especially true by reason of another factor, viz., the cost of the instrument is no greater than that of the ordinary physician's microscope.

Heidbrink Anesthetic Apparatus

An appliance known as the Heidbrink automatic anesthetizer, designed by Dr. J. Heidbrink, of Minneapolis, has simplified and made possible the scientific administration of nitrous-oxygen-ether anesthesia. It was called to the attention of the medical profession in various parts of the country two years ago and has been used successfully in numerous hospitals since that time.

The mechanism of this machine is such that in addition to providing for an even flow of the gases, warming of the gases, rebreathing, etc., it delivers an unvarying dose when the indicators are set for producing anesthesia or analgesia. A uniform dose for adults having been determined to produce respectively anesthesia and analgesia, this machine allows the operator, even without previous practice, to administer the gases in exactly the proper proportions. With a less accurate appliance the anesthetist has to deal not only with the variation in susceptibility

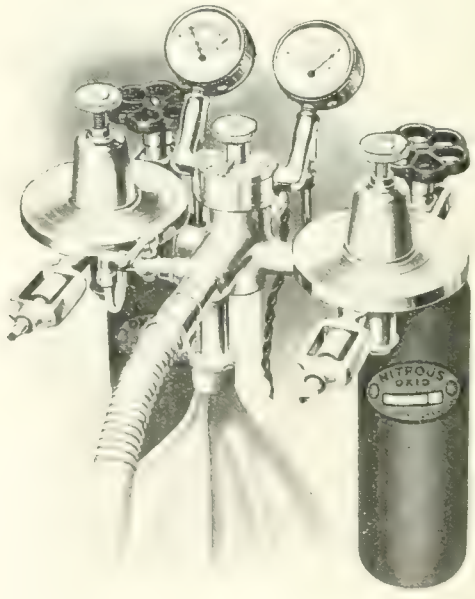


Fig. 1. Apparatus showing gauges set for producing anesthesia.

of his patients, but also with the variation in the dose. When the variation in the dose is eliminated, as by the Heidbrink machine, it is found that in a large majority of patients the variation in susceptibility is so slight that the dose as determined produces a satisfactory result without change. In exceptional cases slight variations in oxygen percentage can readily be made to meet the requirements of the patient.

The Heidbrink anesthetizer is ideal for producing "sunrise slumber" analgesia for painless childbirth, and the operator need not be familiar with nitrous-oxide-oxygen anesthesia to operate successfully the appliance for this purpose.

Another feature provided for by the Heidbrink machine is of special importance in tonsil and adenoid cases and other operations where the mouth is open. The center valve controls the opening through which the nitrous oxide flows and keeps the openings at all times in proper relation

Fig. 2. The Heidbrink face inhaler held in position.

to each other, so that when the flow is increased or diminished the character of the mixture is unchanged. This feature is of utmost importance especially in forcing the gases to compensate for mouth breathing.

In anesthetizing with the mouth of the patient open, usually the mouth must be covered during the induction period. As soon as the covering is removed, in order that the operation may begin, more or less mouth breathing results and the anesthesia may be lightened to an undesirable extent. With the Heidbrink machine, when anesthesia is induced and the character of mixture is found to accommodate the patient, the flow of the mixture may be increased to force it through the nose or the mouth tube without changing the character of mixture found to accommodate the patient.

The Heidbrink anesthetizer is the only apparatus which meets this requirement, and this feature alone has removed many of the difficulties ordinarily met with by beginners and experts as well, in procuring satisfactory results in prolonged anesthesia and analgesia.

The above described features make it easy to maintain an even anesthesia throughout a tonsil operation, whereas formerly it was most difficult.

Ether vapor, warmed, may be accurately introduced into the anesthetic mixture through the ether vaporizer. The construction of the ether vaporizer and its location on the appliance is such that the minimum amount of odor of ether is left in the tubing and bag after use, and can be flushed out with a little gas so as not to be objectionable to the following patient. The face inhaler is designed for the comfort of the anesthetist; while holding it in position the elbow rests on the operating table and the hand rests on the patient's forehead.

Impermephane—A New Material for Surgical Use

A new material has recently been put on the market to take the place of oiled silk, oiled muslin or gutta-percha tissue for surgical dressings.

In view of the seemingly extravagant claims made in the literature the writer thought best first to have the facts demonstrated by test before reporting the material in this department. A quantity of Impermephane was placed in ether and left for three days. Upon careful examination there was no deterioration noticeable. The same material was then placed in a sterilizer and boiled for thirty minutes. Boiling failed to show any ill effects.

The claim is also made that the material does not deteriorate with age. Of course, it is impossible at this time to verify this claim, but if Impermephane does not deteriorate it would seem it has many advantages over other material which has previously been used for surgical dressings. The hospital superintendent is too often compelled to buy a new supply of gutta-percha tissue, at the same time discarding some which has become brittle before it is used. Impermephane is transparent, quite flexible and has no odor. The price is somewhat lower than many kinds of surgical dressings used in the same way. The material has been put on the market by Reid Brothers, of San Francisco, but we presume that it may be procured from any first-class surgical supply house. As the price seems to compare favorably with that of oiled silk, muslin or gutta-percha tissue, hospital superintendents will be quick to take advantage of the opportunity to give it a trial.

Improved Operating Table with Adjustable Top

Operating tables which may be raised or lowered in order to facilitate the work of the operator by permitting the surgeon, as his work progresses, to raise or to lower the patient to a position in which the work can be carried on to the best advantage have become more and more popular in this country during the last two or three years.

A new model of this type of table has recently been constructed by the Scanlan-Morris Company, from suggestions given them by Dr. Balfour, of Rochester, Minn., and several of these tables have been in use for some time at the Mayo Clinic.

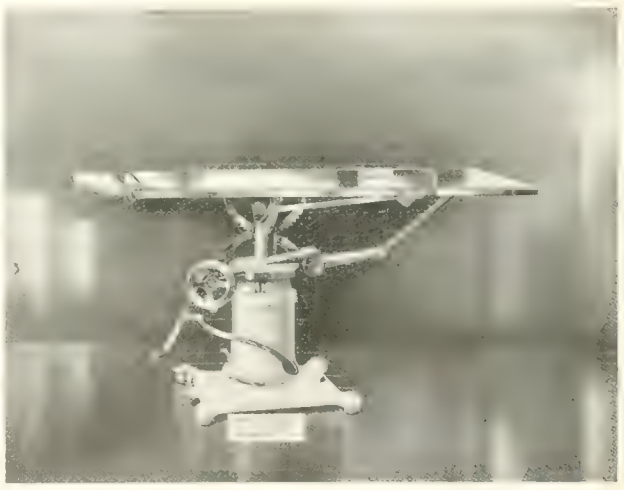


Fig. 1. Balfour operating table. Horizontal position.

Some of the main features of this new table are its rigidity, due mostly to the extra heavy base, and the ease by which all positions can be controlled by the anesthetist without leaving his position at the head of the table. The table top can be elevated, lowered and rotated. The Trendelenburg, as well as the reverse Trendelenburg position for goiter work, gland dissections, etc., are easily secured.

The foot piece of the table can be dropped at an angle of 45 degrees to table top or removed from the table entirely when so desired in gynecological work.

A body elevator is provided for use in nephrectomy, stomach work, etc. This is adjustable up and down and retains its adjustment without catch or cog. It is so

placed on the table as to permit of its being brought forward close to the head of the table, moved back to the center section or beyond, as may suit the operator's convenience. This elevator is also fitted with adjustable (removable) posts for holding patient in correct position.

The supports which hold the instrument rack are self-adjusting, thus keeping the instrument rack at all times in its proper relation with the operating table regardless of

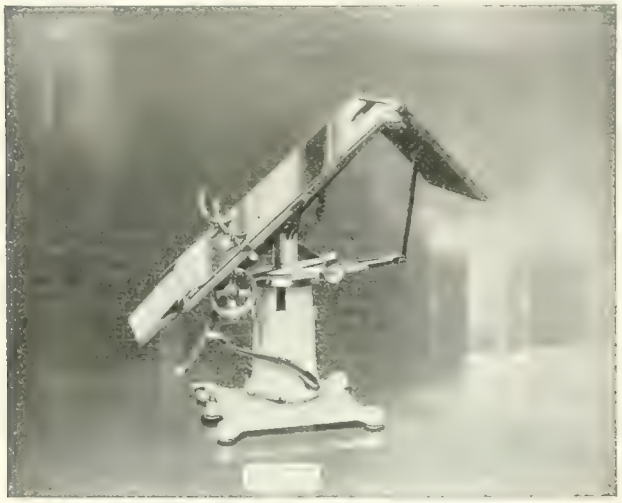


Fig. 2. Balfour operating table. Trendelenburg position.

the change of position. Clamps for wristlets, also clamps for strapping the patient to the table, are provided. The shoulder crutches are adjustable, and modified Bierhoff knee crutches are so made as to support and hold the patient securely. All of these attachments are held in position by a narrow rail, which is attached to both sides of the table top and can consequently be adjusted at any place desired.

Pressure of the foot on the raising lever elevates the table top, while pressure on the releasing lever lowers the

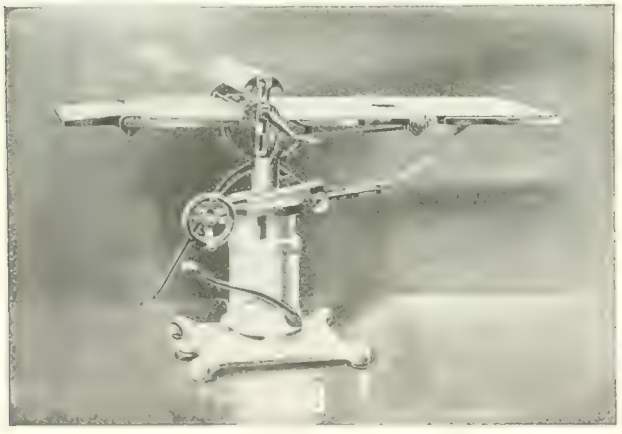


Fig. 3. Balfour operating table with body elevator in position.

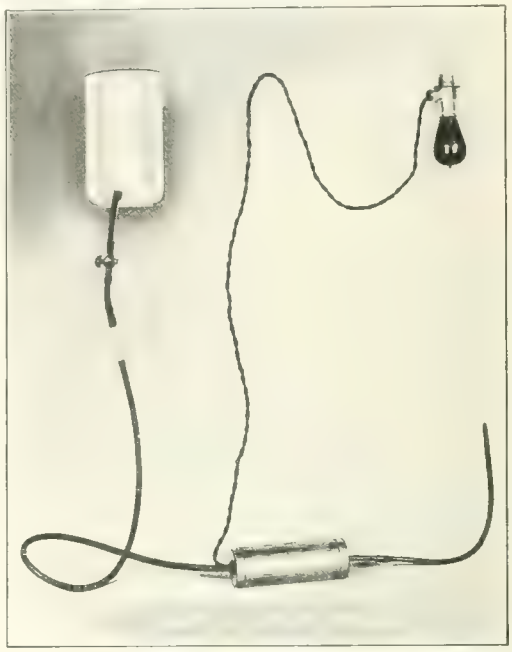
top, which is adjustable in height from 32 to 42 inches. The top is mounted on a telescopic casting fitted into an extra heavy cast pedestal, and elevation or lowering is accomplished by a smoothly working oil pump.

The pedestal supporting the table is mounted on sliding shoes, which permit the table to be moved without undue exertion. The entire top is made of so-called Benedict nickel, a highly polished, non-corrosive metal, which is impervious to such solutions as are used ordinarily in the operating room.

Nylander Electric Saline Heater, for the Saline Solution in Proctoclysis Treatment

This instrument consists of an attaching plug and silk covered connecting cord for attaching to the lighting circuit a pilot light to show that the heater is in operation, and a metal encased heating coil through the center of which passes the tube from the container to the patient.

It will accurately maintain the saline solution at a temperature of 98 to 105 degrees Fahrenheit. It seems to be the consensus of authoritative opinion that the best



Nylander electric saline heater.

results are obtained from giving saline solutions by the drop method (proctoclysis treatment) when the temperature of the solution is maintained at 98 to 105 degrees Fahrenheit.

It will not let the solution get above or below the required temperature. The saline solution does not come in contact with the heater. It is sanitary and requires no sterilizing. A turn of the switch sets it to work or stops it; it cannot be misused, as it has no delicate or moving parts and it cannot get out of order. Manufactured for Sharp and Smith, Chicago, Ill.

Medical Training for Women

We quote the following from an appeal for funds to increase the facilities for the medical training of women recently issued by Earl Curzon, Mr. Asquith and Mr. Balfour:

"The war has constituted a turning point in the position of medical women, and there are new openings and new opportunities for them in many directions. Increasing numbers of women are desirous of entering the profession, and to provide for their adequate educational needs the London (Royal Free Hospital) School for Medicine for Women is now practically doubling its laboratory accommodation. The Council of the School has already received £15,000 of the £30,000 required for the additional buildings and their equipment."

The Franciscan Sisters, in charge of the Sacred Heart Hospital, Eau Claire, Wis., recently celebrated the twenty-fifth anniversary of the establishment of that institution.

THE HOSPITAL KITCHEN

Any questions regarding equipment or other matters connected with the kitchen and dependent departments of food storage and service will be answered in this department. Address communications to The Modern Hospital, Kitchen Department, Metropolitan Building, St. Louis.

AN EFFICIENT ELECTRIC KITCHEN PLANT

The Pennsylvania Hospital Makes Encouraging Report on Its Diet Kitchen Equipment—Hopes to Equip Main Kitchen

BY DANIEL D. TEST, Superintendent.

A letter of inquiry from the editor of THE MODERN HOSPITAL prompts me to give to the hospital people the results, up to date, of our installation in the Pennsylvania Hospital of electrical kitchen equipment.

I do not feel that my experience would justify me in reaching any definite conclusions on this very interesting and very important subject; but I am quite willing to tell the readers of THE MODERN HOSPITAL of what our equipment consists, and some of our impressions concerning it.

We first installed a small electric range in our diet kitchen three years ago, but it was not until the first of the present year that this kitchen was completely equipped with electrical apparatus. This equipment consists of one large range, one broiler, one toaster and one tea-kettle, all manufactured by the General Electric Company.[1] The range has two large ovens and eight top, or cooking, plates. The oven capacity is quite equal to two ordinary coal ranges, and the top cooking space almost equal to two coal ranges. Each unit is under separate control, so that one unit or all the units can be used with equal convenience.

The price of this range is four hundred and fifty dollars, but the increased demand will probably reduce this price. Broilers can be purchased for from fifty to one hundred and fifty dollars—according to the size and type; this price will doubtless be reduced also. The manufacturers claim that the heating units, especially in the range, are practically indestructible and that the cost of repairs will be very low. This is yet to be proven.

More important than the initial cost and the possible cost of repairs, is the question of efficiency and the cost of maintenance.

As to efficiency, I believe electricity has already established its place in the realm of cooking It is more easily controlled and, I believe, is preferable in every way to gas or coal—whether it is top-stove cooking, baking, roasting or broiling. The question of the cost of current is the vital one, and one which I do not think has been definitely solved under all the various conditions which exist. With the equipment which I have mentioned above, we cook for twenty-six private patients; any members of the training school or hospital family who may be sick; and prepare all special diets for two hundred and seventy-five ward patients. I doubt, however, whether the special diets in the Pennsylvania Hospital amount to as much as in some others. Everything for the private patients is done in this kitchen excepting the baking of bread, and this is offset by the baking of "special" bread for special diets.

Fig. 1. Diet kitchen, Pennsylvania Hospital. Electric range and broiler.

The amount of current required to do this work has averaged forty kilowatt hours per day. Thirty-two kilowatt hours is the smallest day's consumption and sixty-five the largest. Baking and roasting would partially account for this difference. The current has been measured on a meter especially constructed and very sensitive.

The question of cost depends largely, of course, upon

[1] I hesitate to mention the manufacturer's name, as I do not want to seem to be advertising any special firm; but this would probably be one of the first questions asked by the reader.

Fig. 2. Diet kitchen, Pennsylvania Hospital. Electric range.

whether or not one can utilize all, or part, of the exhaust steam. Before installing our present equipment, we already carried a load which produced more exhaust steam than we can utilize during four months of the year. Therefore, during this time we must charge to cooking the cost of producing the electricity when the exhaust steam is wasted.

A scientific man would apportion the total output of his steam plant with the total expense, but as we already had a fixed overhead charge and certain running charges, we tried to get at the extra expense of the cooking by determining, as best we could, the cost in fuel to produce the current used, the interest on the investment and the wear and tear of apparatus.[2]

The cost, in fuel, of producing a kilowatt hour of electricity in the average small plant is a debated question, and surely must vary somewhat in different plants and in different parts of the country.

We are now installing scientific apparatus in our boiler plant, which I hope will enable us to determine accurately this cost in our plant; but the figures I will give are based on the report of the average cost in fuel of a kilowatt hour in commercial lighting plants, in size from one hundred to five hundred kilowatts. The Pennsylvania Hospital plant would class with these.

This average would indicate a cost for us of one and six-tenths cents per kilowatt hour. The actual cost is probably somewhat above this. If these figures are correct, we are spending less than seventy-five cents a day in fuel in our diet kitchen during the time of wasting our exhaust steam.

During eight months of the year, when we can utilize the exhaust steam for heating purposes, the cost must be much lower than this; and, if the results of investigation on this subject are correct, the cost of electricity under these conditions must be very inconsiderable.

I am informed by scientific engineers that out of four hundred and forty-five heat units in steam under one hundred pounds pressure, four hundred and thirty-five units remain in the exhaust steam as it comes from the engine. This being true (and from my own experience I believe it is, at least, approximately true), the cost of the fuel for electric cooking during much of the year must be very little.

It has been definitely established in Philadelphia that the cooking for a large institution can be done by gas[3] at one dollar per thousand feet, as cheaply as by anthracite coal at the prevailing price. The question which is uppermost now seems to be the relative cost of gas and electricity. The manufacturers of electrical cooking apparatus claim that electricity at two and one-half cents a kilowatt hour is as cheap as gas at one dollar per thousand feet.

We propose shortly to instal also a gas range in our diet kitchen in order to make careful comparison, and I hope to feel more sure of my position in the months to come. However, I am free to confess that I am enthusiastic in the matter of electric cooking, and I am already dreaming of the day, and not a far distant one, when we will have our main kitchen electrically equipped. I realize, however, that experience may prove this to be impracticable; but when we realize that one manufacturer sold over three thousand electric ranges last year in the United States, and mostly to persons who have to buy their current, the question seems to be one well worth investigation.

It may be interesting to your readers to know that the kitchen of the Bethlehem Steel Company, of Bethlehem, Pennsylvania, is equipped entirely with electric ranges, broilers, etc. This kitchen feeds five hundred persons and there is perhaps no kitchen in the country more scientifically operated.

Your readers may also be interested to know that four years ago we installed electric radiators in eight rooms which are used by employees and the location of which made the running of steam pipes difficult. The results have been very gratifying. The system is controlled by the engineer and the current is turned on in time to warm the rooms for the evening. At ten o'clock it is cut off and turned on again in the morning long enough to take the chill off the room before the occupant gets up.

The results which were obtained at the Pennsylvania Hospital when an electric plant was first installed fifteen

[2]Time only can tell what this last will be.

[3]Unless the use of the gas is closely watched, however, it will cost much more than coal.

Fig 3. Diet kitchen, Pennsylvania Hospital. Cupboard corner.

years ago may be interesting to those who are undecided whether or not an individual plant is a paying investment, and may throw some light on the question of the cost of producing electricity in such a plant.

The first year thirty-five hundred dollars were saved in lighting alone; and our lighting was much more efficient, as two sixteen candle-power lamps were used where only one gas jet had been used.

During this year we burned only thirty tons of coal more than the year previous, and as the annual consumption was thirty-five hundred tons, this variation might easily have occurred without the addition of the electric generators. During this time the same grade of coal was used as the year previous and at the same price, the plant was under the care of the same engineer and the mean outside temperature of the six months, October 15 to April 15, was one-fourth of one degree lower.

This would seem to justify the contention that the cost of producing electricity is very little when the exhaust steam can be utilized.

Kitchen Plan for a Hospital of 150 to 200 Beds

BY P. B. SCHWEIKERT.

The plan herewith shows the minimum equipment necessary to operate economically the kitchen of a hospital of 150 beds. In order to expand it to care for 250 beds, the only additions necessary are two more sections of range, another steam kettle and one more compartment steamer.

It is presumed that the dishwashing will be done in the serving rooms, hence no dishwashing machine is shown on the plan in the kitchen.

Contrary to a common practice, the storeroom contains only storage refrigerators, bins and shelves; the meat block, cutting bench and sink, which are often put in close juxtaposition to the meat refrigerator in the storeroom, are placed in a separate room, which also contains all the mechanical appliances.

The handling of meat in the storeroom is a sloppy operation, and it is better done away from it and outside the kitchen; hence the placing of this department in the preparing room.

Placing the vegetable peeler, ice cream freezer, ice crusher and meat chopper together enables one motor with line shaft to take care of all of them. An installation of this character has just recently been put in the Youngstown City Hospital, and Mr. Bunn, the superintendent, expresses himself as being entirely satisfied with it.

Three sections of center range with three ovens and a broiler occupy the center of the kitchen; also a three compartment steamer and a steam kettle. The whole is covered by a canopy which conveys the heat and gases to a ventilating flue 40x28 inches in size, the smoke being conveyed to a separate flue which should not be less than 200 square inches in area, so as to accommodate extra sections if necessary.

One side of the kitchen is devoted to preparation and cleaning. It contains a cook's table with pan rack above; opposite this are the vegetable sinks and table, the dish sinks and table and pan sink and table.

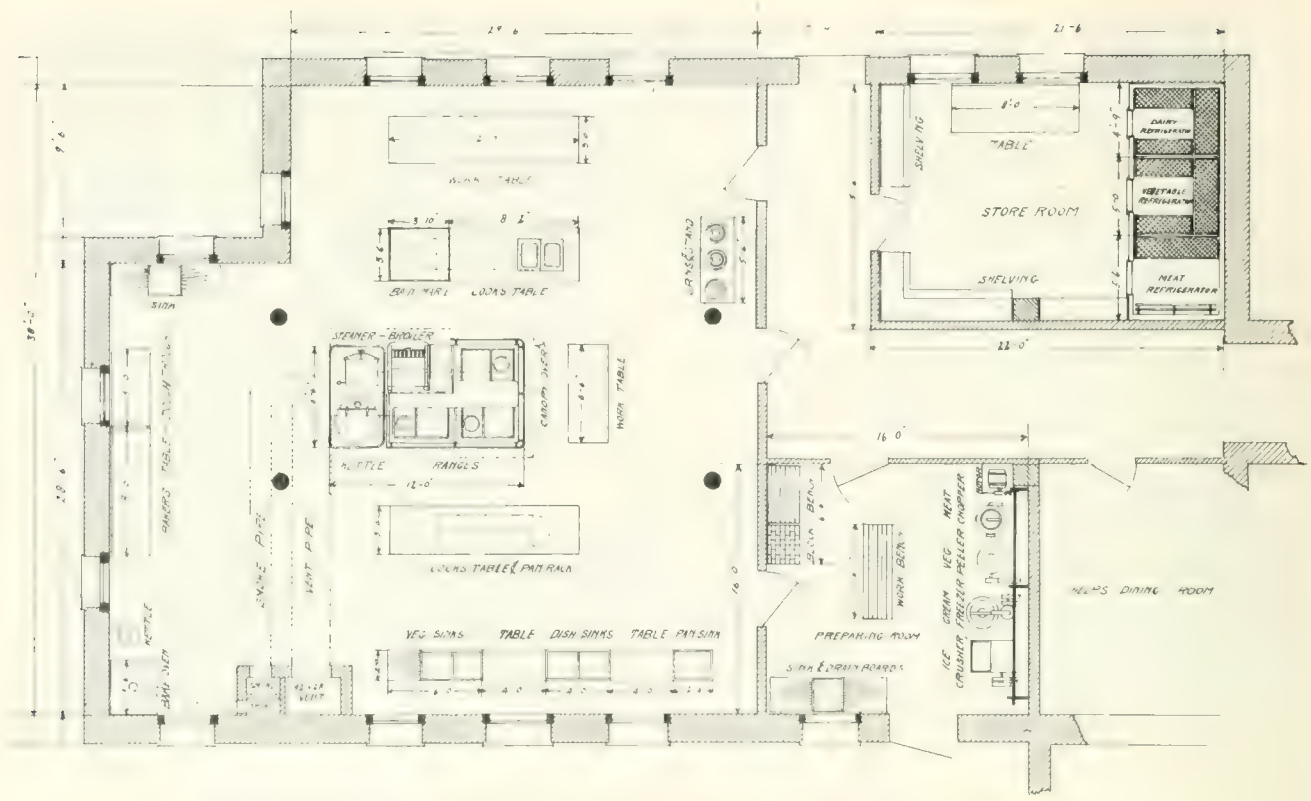
Sinks are placed away from the walls so as to enable cleaning to be taken care of properly.

On the opposite side of the kitchen is located a cook's table containing a large bain marie and meat panels; this table also has a pan rack above it.

A large work table is also provided away from the wall and accessible on both sides. This is primarily intended for the convenient handling of the food boxes before being put into the wagons. The intention is that the food wagons shall enter at one door, fill up and go out at the other, with as little delay as possible.

A battery of urns on an urn stand is also placed in this end of the kitchen.

A bakeshop is provided, which contains a bake oven in one corner convenient to the flue, a pastry kettle, baker's work table, dough trough and sink. This bakeshop is not intended for heavy bread baking; it is only



Kitchen equipment for 150 to 250-bed hospital. Designed for THE MODERN HOSPITAL by P. B. Schweikert.

for rolls, pastry, corn bread, muffins, biscuits, puddings, etc. A bread bakeshop requires a much larger oven and other apparatus requiring more space.

All the details of specifications of the different fixtures have already been dealt with in previous articles.

It will be found that the kitchen shown has plenty of natural light. The heat and gases will all be sucked up under the canopy and carried into a flue with a fan on top, as shown in last month's MODERN HOSPITAL, so the ventilation will be as nearly perfect as possible.

The floor space is ample for the purpose and small enough to prevent unnecessary steps, which is an important matter. It is a fallacy that a large kitchen gives better ventilation. If ample fresh air can get in and proper provision exists for carrying away the heat, the small kitchen will be just as cool as the large one.

Electric Cooking in the Ward Kitchen

The enemies of electricity as a fuel for cooking have only one real objection—the cost of current.

Institutions which manufacture their own electricity have usually a low cost of production, and since the load is light during the day any extra current used is really a negligible quantity in point of cost; and in many places electricity for institutions does not cost over 2½ cents from the light company.

In the ward kitchen the cooking done is light and intermittent and the actual number of minutes the current is in use is not usually large.

Gas heats up the kitchen and vitiates the atmosphere, and unless the burners have a regulation seldom found, it also blackens the utensils, whereas electricity does not.

The one thing essential is to shut off the current when the hot plate is not in use and the use of red light on the circuit which shows when the current is on and will enable the head nurse in passing to see whether someone has been careless and will practically insure the economical use of current.

Under these conditions a hot plate such as was illustrated in the August number of THE MODERN HOSPITAL (Fig. 4) will be found the most convenient, as toasting and broiling can be done underneath and toasting and boiling can be done on the top at the same time.

Where a steam table is used the water pan can be heated with electricity. It is an easy matter to apply the heating units to the bottom of the water pan by taking out the gas burners. It is important, however, to see that a good type of heating unit is procured.

The placing of the heat unit in the water is not satisfactory, because the water gradually destroys it and it is in the way when the pan is to be cleaned out.

Of course, where steam is available all the year round it is preferable to either gas or electricity, but in many cases there is no steam available in summer, and in these cases electric heating units can be applied to the steam tables in summer without touching the coils, and the heat can be taken from them in summer and from the coils in winter, when the demands on the electric plant are always greater.

One word of warning is, however, necessary: see that the electrical device chosen is substantially built. At the present time strongly built devices can be obtained, though this was not the case some years ago.

An examination will soon be held by the Illinois State Civil Service Commission, Springfield, Ill., for the purpose of filling the recently created position of epidemiologist for the Illinois State Board of Health. The position will pay $2,400 a year. It is open to male residents of the United States over 25 years of age, and the examination will be conducted on a plan which will not require the applicant to go to Illinois unless he stands a good chance of qualifying.

EXHIBITION ROOMS DESIGNED TO SHOW HOSPITAL FEATURES

Treatment of Walls, Floors, Windows—The Furnishings—Pictures That Are Not Dirt Catchers

One of the difficulties encountered by hospital people who have ideas and ideals in matters of equipment and administration is the want of money to do the necessary experimental work to try out the practicability of their ideas. That is the reason why the large, well endowed hospitals can do much in the way of leadership, and why the small hospitals, as a rule, must follow; these latter have not the necessary funds to make changes here and there, to make up new apparatus and put in new equipment.

Fig. 1. A typical ward, with dado, frieze, and special wall treatment, and new design of picture.

And yet, we know that many problems in our hospitals are not settled, and that a lot of experimental work must be done before they *are* settled, and somebody must be found who will be sufficiently interested to spend the money at the instance of the hospital people to do a lot of experimental work, and we all have our own ideas about certain things.

In order to carry out some of these ideas along certain lines it became possible a few weeks ago to equip a hospital ward and a hospital private room and to make a part of that equipment some items that have not been considered satisfactory in our hospitals up to the present time.

The illustrations accompanying this article show as nearly as photography can be made to do, some of these items which may be described under their several headings.

THE WALLS

In most hospitals the walls and ceilings are in solid colors, whatever those colors may be. We know that walls and ceilings do not wear out or become defaced equally all over; for instance, the lower parts of the walls are scratched and scraped by furniture, beds, and by people handling screens, chairs and other furniture; but it is impossible to go over the lower part of the walls without at the same time going over the whole room, because it is impossible to match paint after it has been on for some time. For these reasons the rooms herein described have been divided by dados and friezes, and into panels, thus making it possible to go over the lower part of the room with fresh paint without having to spend the time, labor and material to go over the rest of it; and under this scheme any part of the room may be renewed where the walls have been defaced, without having to do the whole surface over.

The question of wall colors for hospitals is a universally debated one, and until tastes are all alike it will be impossible to satisfy everybody in regard to colors. Without any question, positive, glaring colors are not desirable, especially in quarters occupied by patients who are changing from day to day; one may like gray, another blue, another green, and so on.

In the coloring of these walls an attempt has been made to compromise on artistic taste, and a color has been chosen that cannot really be described. It is neither yellow, nor green, nor gray, but a neutral composed of all these, which, it is believed, will appeal to the taste of almost any patient in that it is neutral and negative. The painting is of the so-called mottled type in which the various coats are put on with a stippling brush, as indicated in figure 3.

THE WINDOWS

The treatment of the windows in this ward and room speaks for itself. Nothing gives a patient's room so thoroughly comfortable and cozy a feeling as quietly dressed windows. The hangings need not be expensive, but they must indicate coziness, elegance and quiet. The curtains in these windows are madras, ivory in color, with tiny figures of light green.

Fig. 2. Design of a private room showing wall and window treatment. Note pictures.

PICTURES

For a long time hospitals have known the need of picture decoration in wards and rooms, and yet it has been quite well known that picture frames hung upon the walls are unsanitary dirt catchers, and while it may be humanly

possible to clean pictures after each patient has departed or when the room is cleaned, we know that that is not done and that pictures once hung remain in their places through many processes of cleaning. We know that this means microorganisms of infinite variety, which may or may not be disease-bearing.

The pictures on the walls of this ward and this private room are of a new style. They are prepared on the old decalcomania principle and are transferred to the painted walls. Most of us remember in our childhood the decalcomania transfers that we all liked to transfer to our school books and on eggs for Easter, and the like; this is precisely the same process. After the transfer is made

Fig. 3. Detail of ward wall, showing mottled effect, done with a stippling brush; also dado, frieze and picture.

and the picture is perfectly dry, a coat of artist's copal varnish is laid on thinly. The frames are made with shadow effects that will be noted especially in the detailed illustration, Fig. 3.

FLOORS

The floors of the ward and the private room are covered with linoleum, that on the ward being light brown and that on the private room olive green. The rugs are in bright colors, with green figures predominating to harmonize with the general treatment of the two rooms.

These rooms are at 1347 Michigan avenue, Chicago, on the fourth floor, and are open to the inspection of the public during all business hours. The hospital people will meet with every courtesy if they care to see them, and demonstrators are on hand to explain the various features.

The hospital which G. H. Marsh, of Van Wert, Ohio, will erect and present to Van Wert county, fully equipped, at his personal expense, is to have accommodation for 65 patients. There will be two seven-bed wards, eight rooms with two beds each, twenty-five private rooms, and an emergency ward containing ten beds.

HINTS FOR HOSPITAL SUPERINTENDENTS.

The surgeons at Hahnemann Hospital, Chicago, have adopted the plan of using a large nickel ring sewed to the tape of their "lap" sponges, instead of the time-honored "snap." This ring has the advantage of being always attached and is quite as safe a protection against leaving sponges in the field as the snap forceps.

Dr. F. K. Camp, of Wesley Hospital, Oklahoma City, furnishes a thermos bottle for every bed in that hospital, and each morning the thermos bottles are filled with ice cold water. The bottles are then hung over the head of the bed and patients can have a cold drink for the next twenty-four hours and the nurse will not have to gallop out to the drinking fountain in the hall or back to the diet kitchen; moreover, many of these patients can help themselves to a drink if the cold water is hung over the head of the bed. This is an excellent suggestion. The thermos bottles do not cost so very much now, and if any kind of care is given them they last indefinitely. More hospitals ought to use them.

If you are working under the workmen's compensation laws, you had better study those laws very carefully and learn just what your duties and privileges and compensations should be. Most states now have these laws and they are not only rather complex and intricate, but in most of the states the legal board provided to carry them out is given a good deal of latitude as to details. You should be in pretty close touch with this board in your state, and know just what its policies are in regard to patients under its care.

These workmen's compensation laws, where they are in operation, are going to require better bookkeeping on the part of the hospitals, and hospital administrators had better look up this part of the business also. Most of these laws are yielding too little revenue to hospitals for the work on patients that they are required to do, and good bookkeeping as a preliminary to argument for better compensation is going to be necessary.

Some hospitals that serve excellent foods, set attractive trays, and buy the best that the markets afford have a reputation for poor food service; the doctors, nurses, help and patients all complain. In some of these institutions the cook or housekeeper may be partly to blame, but if the case is submitted to an impartial analysis it will be discovered that "deadly monotony" is the indictment. It has been said by European epicures that Americans eat too much "with their eyes"; it is certain that the mind has as much to do with the enjoyment of food as the digestive apparatus; and if one knows for a certainty just what is to be served for supper on Sunday evening, December 19, next, and for every meal between now and then, the imagination will have been surfeited in advance of the meal and hunger will have nothing left to satisfy except just physiological necessity. When one is doing hard work in the open air, so that oxidation is active, and the waste burned up rapidly, plain physicial hunger is enough, but that condition does not obtain in any hospital, and there must be food for the imagination as well as for the palate and stomach; nothing so stimulates the imagination as the sense of surprise; and there is no condiment so effective as a change that has not been anticipated.

Moral: Encourage your dietitian to spring surprises at meals; even the hackneyed articles can be served differently.

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Published the First of Every Month by

THE MODERN HOSPITAL PUBLISHING CO., Inc.,
OTHO F. BALL, President.

METROPOLITAN BUILDING, ST. LOUIS, MO.
Telephones—Bell, Lindell 5400; Kinloch, Delmar 3154.

BRANCH BUSINESS OFFICES.

CHICAGO—1502 Tower Building.....F. S. KING, Mgr.
NEW YORK—437 Fifth Avenue.....ERNEST S. REID, Mgr.

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Modern Chambers, 317 Collins Street, Melbourne.

SUBSCRIPTION.

Under domestic postage, $3.00; foreign postage, $3.50 (14 shillings). Single copies, 35 cents.

Domestic rates include United States, Cuba, Mexico, Porto Rico, Canal Zone, Hawaii, and Philippines.

SUBSCRIPTIONS.—Subscriptions may begin at any time. Volumes begin January and July, except in the case of Volume I, which consists of the numbers issued during 1913 (September to December, inclusive).

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NEWS OF THE HOSPITALS AND SANATORIUMS

A county sanatorium was recently opened at Greenville, S. C.

A hospital is being erected for the State Orphans' Home at Corsicana, Tex.

Mrs. Lydia Valade has resigned the superintendency of the county hospital at Davenport, Iowa.

The Dover General Hospital, Dover, N. J., will open a new building about November 1.

Efforts are being made at Cherokee, Iowa, to raise $50,000 for the erection and equipment of a general hospital.

Wheat valued at $4,518 was grown on the farm of the Larned (Kas.) State Hospital this year.

Dr. E. P. Guerrant, owner of the Bethany Hospital at Winchester, Ky., is enlarging the capacity of that institution.

A two-story addition is in course of construction for the Park Hospital at Livingston, Mont., owned by Dr. Windsor.

The trustees of the Massie Memorial Hospital at Paris, Ky., are planning to erect an addition for the care of negro patients.

It is reported that the construction of a $50,000 sanitarium at Perry, Ohio, for Dr. John T. Frawley, will be started in the near future.

Two new buildings, with a capacity of 600 patients, have recently been opened at the Southwestern Insane Asylum at San Antonio, Tex.

Miss Elizabeth Kelly, superintendent of the El Paso Sanatorium at El Paso, Tex., is erecting a private sanatorium on Altura boulevard in that city.

Drs. H. H. Heylum and E. C. Carpart have installed in the Methodist Hospital at Hutchinson, Kas., a new x-ray outfit of the transformer type, costing $2,750.

Extensive improvements, including an addition to the main building and a new home for nurses, are being completed at the Epworth Hospital, South Bend, Ind.

Drs. Edward G. Cromwell and T. C. Coggshall, of Henry, Ill., are having a building at Henry remodeled for a ten-bed hospital, which they will open in the near future.

A movement looking toward the establishment of a hospital in Oilton, Okla., has been started recently. The cooperation of the oil companies operating in the Oilton field is expected.

There is talk of the probable erection at Charles City, Iowa, of a combined hospital and physicians' office building, designed along the lines of the Park Hospital at Mason City, Iowa.

The French government has conferred the rank of Médécin-Major on Dr. Helen Sexton, the director of the Australian Hospital at Auteuil. The staff of this hospital consists entirely of women.

Plans drawn by Architect Roy H. Shively, of Sandusky, Ohio, have been accepted for the Harkness Memorial Hospital to be erected at Bellevue, Ohio. The cost of the building is estimated at $30,000.

Dr. James A. Nydegger, a surgeon of the United States Public Health Service, who returned the latter part of August from a four-month trip to England and France, where he studied various peculiarities of tropical diseases, is of the opinion that a special hospital for the study of such diseases should be established in this country. Dr.

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Cultural examination of pus, sputum, feces, etc., each	5 00
Cultural examination of feces	5 00
Cultural examination of feces for parasites	2 00
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Blood count, differential red and white cells and hemoglobin	5 00
Blood count, leucocytes and differential count only	2 00

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Manufacturing and Biological Chemists

Nydegger believes that the hospitals of America have much to learn from the English and French institutions in the way of modern appliances for the proper handling of sick and injured persons.

A movement for the establishment of a local hospital has recently been started at Carrington, N. D. A similar project was launched at Carrington two years ago, but was abandoned by the promoters.

The board of county supervisors of Niagara County, New York, will this fall submit to the voters of the county a proposed expenditure of $100,000 for the erection of a tuberculosis hospital near Lockport.

Plans are being drawn for a building to be erected for the Lakewood Sanitarium, at Lakewood, near Cleveland, Ohio, at a cost of $30,000. The Lakewood Sanitarium is conducted by Dr. Alvah S. McClain.

Plans for the Bronx Maternity Hospital, to be erected at Intervale avenue and 165th street, New York City, call for a three-story structure, 50x100 feet. Dr. Julius Weiss is chairman of the building committee.

Dr. E. D. McKinley, of Alamogordo, N. M., has taken a three-year lease on a building in that city formerly used by the El Paso & Southwestern Railroad for hospital purposes and is fitting up a 20-bed sanatorium.

The Washington Park General Hospital Association, of Milwaukee, recently incorporated by Dr. E. W. Timm, M. A. Gibbons and Dr. W. F. Hilger, proposes to erect a three-story building with a capacity of sixty-four patients.

Miss Mary Hamer Greenwood, superintendent of the Jewish Hospital in Cincinnati, is recovering from a fracture of the leg, sustained when she was thrown from a horse while on her vacation in the mountains of North Carolina.

State Senator Albert L. Ward, of Fairmont, Minn., will build and maintain with his private fortune a home for dependent and neglected children. Articles of incorporation for the proposed institution have been filed with the secretary of state.

A three-story brick and concrete building is being erected at San Pedro, Cal., for the hospital to be established by the Sisters of Mercy. The structure will contain twenty private rooms, two wards of six beds each, operating room, offices, etc.

Miss Ida Isaacson, superintendent of nurses at the Swedish Hospital in Minneapolis, has been appointed by Governor Hammond as a member of the state board of nurse examiners to fill the vacancy created by the resignation of Miss Helen M. Wadsworth.

Dr. Raymond Cary, of Pittsburgh, Pa., has been elected superintendent of Mountain View Sanatorium, the municipal tuberculosis hospital at Tacoma, Wash. Dr. Cary succeeds Dr. R. C. Kirkwood, who has accepted a position at the Minnesota State Sanatorium.

The Columbus (Ohio) State Hospital has a truck garden covering 100 acres of ground. In addition to taking care of the needs of its own 1,900 inmates, the hospital has supplied several carloads of potatoes, cabbage and tomatoes to other state institutions this fall.

Dr. J. Rainey Parker, surgeon at the Goldsboro Hospital, Goldsboro, N. C., is erecting at the town of Burlington, in the same state, a $25,000 private hospital, which he expects to open about January 1, 1916. The building will be fitted up with every modern convenience.

By the will of the late William S. Major, of Shelbyville, Ind., a large stone residence and three acres of ground are bequeathed to that city to be used for hospital purposes after the death of Mr. Major's wife, who is an invalid. The property is valued at $60,000.

Tarpon Springs, Fla., is to have a hospital if plans now being developed are carried out. In commenting on the project the Tarpon Springs *Leader* facetiously remarks that it is assumed the institution is designed for winter visitors, as none of the natives are ever sick.

At a conference of members of the state board of administration and officials of the Chicago Federation of Labor and the Nurses' Union, held in Chicago in August, an agreement as to wages and working conditions in the state hospitals was reached. Under the new arrangement

Towels

The Best Hospital Practice

demands the elimination of the cloth towel and the substitution of a really hygienic and practical towel system. The seemingly clean individual cloth towel gathers germs of the most deadly kinds—and is not freed from them by ordinary laundry washing. *Every* cloth towel carries its colony of myriads of germs from hand to hand and face to face, spreading the white plague, skin, blood, eye and other diseases.

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dispensed one at a time from a dust and germ-proof steel cabinet, and are the first really sanitary, economical and practical towels for hospital use. Each towel is an individual towel, made of pure wood pulp, unbleached and strong; a scientific combination of absorbing quality and strength; deeply creped.

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Detention wards made absolutely secure by subdividing with Muntins.
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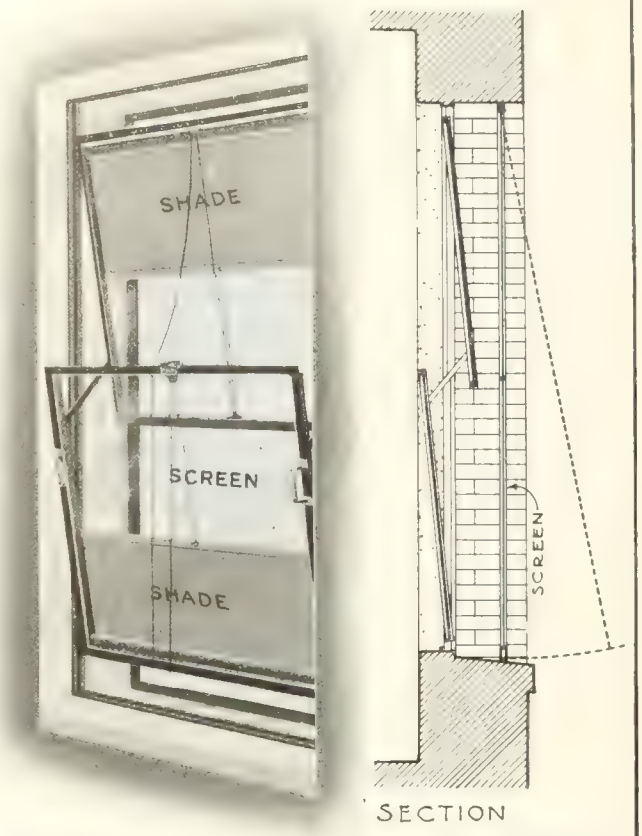

INTERIOR VIEW

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See the Edmands Bakers at the A. M. A. and American Hospital Association Convention exhibits.

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women will be paid the same as men for like duties, and one day's rest in seven will be granted all employees. Other minor changes designed to improve labor conditions in the several state institutions will be made.

The new home being erected for St. John's Hospital, Cleveland, Ohio, at a cost of $200,000, is expected to be ready for occupancy by the first of next year. The hospital is not in operation at present, the old building having been torn down to make way for the new one.

The Board of Managers of the Norwegian Hospital, Brooklyn, announces that, owing to the marked increase in the number of accident calls during recent years (now over ten a day), a portion of the new addition to the hospital will be exclusively devoted to emergency work.

The contract has recently been let for the construction of a new $400,000 home for St. Joseph's Hospital, Kansas City, Mo. The building is to be six stories high and of fireproof construction. Accommodations for 250 patients will be provided. Wilder & Wight, Kansas City, are the architects.

An addition to the county hospital at Eureka, Cal., to cost $18,000, is contemplated. An enlargement of the capacity of the hospital is made necessary under a new law in California which requires counties to care for their harmless instane instead of sending them to state institutions.

The decision of the Red Cross to withdraw its nursing units from all belligerent countries because of lack of funds will not interrupt the work of the American Women's Hospital at Paignton. An American chief surgeon has been appointed and arrangements made for a staff of American and English nursing sisters.

In the fourteen state hospitals for the insane in New York there are 33,900 insane. This is exclusive of 1,360 inmates of two criminal hospitals. Forty-four percent of the patients are foreign-born and twenty-six percent are aliens. The state spends $6,200,000 annually for the maintenance of these institutions.

Mount Sinai Hospital, New York City, is to receive $3,141,552 from the estate of the late Jacob Langeloth, for the establishment of an institution to be known as the Valeria Home, in memory of Mrs. Valeria Langeloth, the widow. Mr. Langeloth was chairman of the board of directors of the American Metal Company.

Dr. Weir Mitchell Hamilton is at the head of the new Pittsburgh (Pa.) Tuberculosis Hospital, which was opened in September. Dr. Hamilton is a graduate of the University of Pennsylvania Medical School. He has practiced medicine in Pittsburgh for about ten years and has spent two years in Europe studying tuberculosis.

The old homeopathic hospital at Second avenue and Smithfield street, Pittsburgh, Pa., was closed August 31, the patients being transferred to the Center Avenue Homeopathic Hospital and city institutions. The old institution was opened in April, 1884, replacing the first homeopathic hospital in Pittsburgh, which was established in 1866.

Increasing patronage has made it necessary for the Shawnee General Hospital, Shawnee, Okla., to enlarge its capacity, and an addition to the main building is contemplated. Local newspapers attribute the success of the hospital in a large measure to the efficient management of Miss I. M. Auten, the superintendent. The institution was established in 1910.

The Good Shepherd Home for Crippled Orphans, Blind Orphans and Destitute Children, in Allentown, Pa., will shortly launch a campaign to raise $100,000. Half of the sum is to be used to cancel a debt, $25,000 for a new building, $10,000 for enlarging and remodeling an existing building, $5,000 for improving a cottage for babies, and $10,000 to start a farm colony.

An interesting history of the School of Nursing and Health of the Cincinnati General Hospital has been compiled by Miss Laura R. Logan, superintendent of the school, and issued in booklet form. According to the data gathered, the institution was established in January, 1889, as the Cincinnati Training School for Nurses. It was reorganized in 1896 as the Cincinnati Hospital Training School for Nurses, and the last change was made in November of last year, after Miss Logan had assumed charge.

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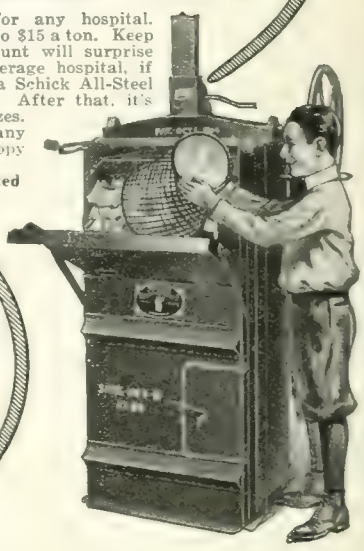

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$3.00

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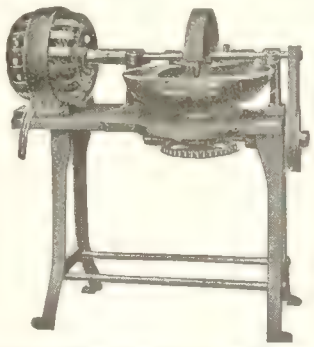
Such is

The Buffalo Meat and Food Chopper

It saves from 200 to 600 per-cent in time and cost of labor

IT will cut cooked meat for hash in three minutes; vegetables for soup in two minutes.

WITH the Buffalo Meat Cutter every useful fragment is utilized instead of being wasted.



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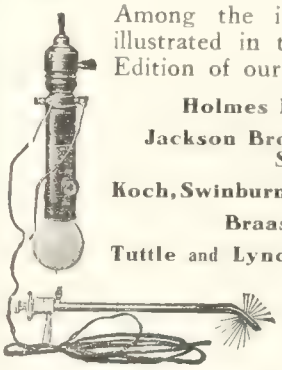
Electrically Lighted Surgical Instruments

THESE instruments are constructed after the suggestions and designs of eminent physicians, and, being particularly adapted for bedside diagnosis they are especially useful in hospital work. As our instruments are now equipped with tungsten lamps, they can be operated upon our new tungsten battery or upon commercial current by means of our socket current controller or socket cautery transformer.



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Jackson Bronchoscopes, Laryngeal Specula, etc.

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Origination begets Imitation

For your own protection be sure every instrument is marked "E. S. I. Co."

Electro Surgical Instrument Co.
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The booklet contains the names of the graduates from the year 1891 down to 1915, numbering 469. The school in its present status is described as being "primarily a professional school, conducted in close cooperation with the Cincinnati General Hospital."

A law providing $400,000 for the erection of six maternity hospitals, one in each province of the island, has recently been signed by the president of Cuba. Of this sum, $100,000 is allotted for the hospital in the province of Habana, and $60,000 each for the hospitals in the other provinces. The money is to be appropriated from the sum accruing to the state from unclaimed lottery prizes.

Bids covered a wide range when the city of Cincinnati recently offered to sell the old building of the Cincinnati General Hospital, which has been replaced by the fine, new plant described in an earlier number of THE MODERN HOSPITAL. For razing the building one concern asked $6,500 and the material, while another firm was willing to pull the old structure down, remove the material and pay the city $2,150.

A project is on foot for the establishment of a hospital in Leesville, S. C. Drs. W. P. Timmerman and R. H. Timmerman, of Batesburg, S. C.; Dr. J. C. Nicholson, of Leesville, and Dr. Jas. P. Drafts, of Barr, S. C., are the promoters. Leesburg is located near the center of a section including the counties of Lexington, Salunda, Edgefield and Aiken, and it is believed that the hospital will be supported by the people of all four counties.

The Bay City (Mich.) Hospital, a semi-public institution with a capacity of 16 beds, is soon to have a new fireproof annex containing accommodations for about forty additional patients, according to an announcement made by the board of trustees. Private rooms for patients, a new operating room, an x-ray room, sun parlors, and a roof garden are to be features of the new building, which it is estimated will cost approximately $25,000.

A new organization, known as the Greenwich Hospital Association, has taken over the Greenwich General Hospital and the Nathaniel Witherell Tuberculosis Pavilion at Greenwich, Conn., which now have a combined capacity of about 70 beds, and proposes to erect an additional building, costing $250,000 and containing accommodations for eighty patients. The fund for the proposed new building has been donated by Commodore E. C. Benedict, a resident of Greenwich.

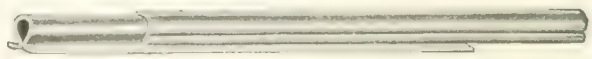
In order to provide adequate facilities for the care of the sick and injured employees of the numerous manufacturing concerns in its ambulance district, the Norwegian Hospital, Fourth avenue and Forty-sixth street, Brooklyn, N. Y., has found it necessary to establish a special accident and emergency department, and such a department will be fitted up in the $100,000 addition now under construction for this institution. The hospital is making an average of ten ambulance calls a day.

In order that beds at one county sanatorium for tuberculosis shall not be permitted to remain vacant while a sanatorium in another county finds it impossible to meet the demands of a long waiting list, the Wisconsin Anti-Tuberculosis Association has volunteered to serve as a central bureau of information through which doctors, patients and nurses can learn of vacancies. Superintendents of the county sanatoriums are cooperating by sending weekly reports to the Milwaukee office of the association. The law in Wisconsin makes it possible for tubercular patients to be sent from one county to a sanatorium in another county.

The annual statistical statement of the National Association for the Study and Prevention of Tuberculosis shows that over $20,500,000 was spent last year in the campaign against tuberculosis in the United States. Of this sum, 66.8 percent was derived from public funds—federal, state, county or municipal—and the remainder was contributed by private philanthropy. Institutional care and treatment of consumptives in hospitals and sanatoria make up the largest share of the total expenditures. More than $17,300,000 was spent for this purpose, with an additional $925,000 for special treatment of tuberculous insane and prisoners.

The Lakeside Hospital at Milwaukee went out of existence September 1. The erection of a large automobile assembling plant on adjoining property is given as the reason for the closing of the hospital. The Lakeside

Tight, because it's shaped right



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Fresh, pure air is a mighty good doctor—and hard to get. You must enlist its aid to realize maximum hospital efficiency, and in order to purify and regulate it, expensive, elaborate ventilating systems have to be installed.

Yet, did you ever think what a leaky affair the ordinary window is and how greatly it can interfere with the proper control of ventilation? How it affords ingress to draughts laden with street dust and impurities; the soot and dirt, the cold and dampness you try to keep out. It's because of those cracks which exist between every sash and its frame to allow free action in opening and closing.

Perfect ventilation requires that these cracks be sealed up, and that is the function of

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Institution Blankets

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The hundreds of institutions that have used these blankets will now not use any other for the reason that they are more satisfactory and superior to any that can be obtained anywhere in the market.

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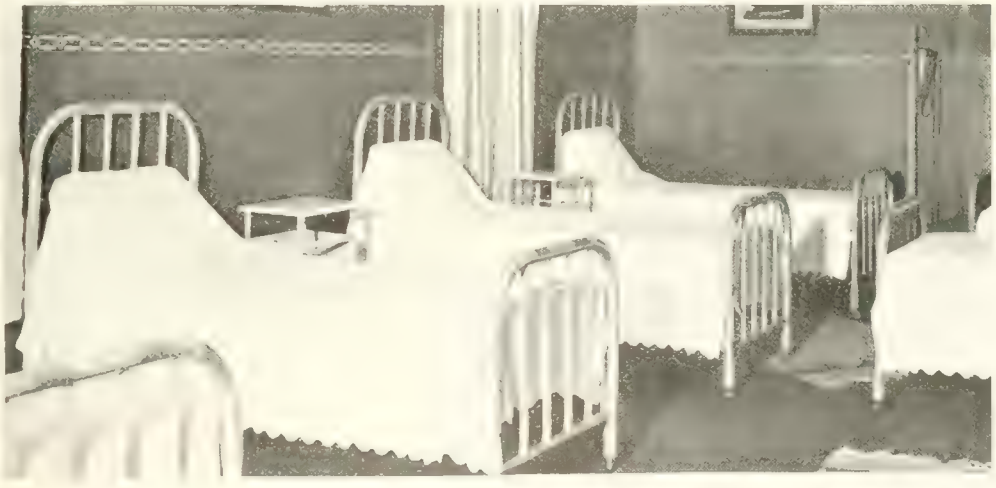

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buy them to last; buy them to stand the hard day and night use that is demanded of them—to retain their life, softness and buoyancy so as to give as good service after years of use as at the beginning.

The hospital where two pillows are being used where one should suffice needs

EMMERICH PILLOWS

Write us for our booklet telling more about Emmerich Pillows. Pillows are not just pillows; they must be designed right and made according to sanitary standards.

CHAS. EMMERICH & COMPANY, Chicago

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Hospital was established twenty-one years ago by Dr. Horace Manchester Brown and has been conducted by him. More than 12,000 patients have been cared for and about 150 nurses graduated. Miss Elysian Thomas, a graduate of the institution, has been its superintendent for the last seven years. Miss Thomas will continue in hospital work, not as an executive, but as an anesthetist, having specialized in this branch of nursing.

News of the death of Miss Frances Munroe, assistant supervisor at the Huron Road Hospital, Cleveland, Ohio, who was enlisted as a war nurse with the British army, has been received at the hospital. The first report, which came in a cablegram, mentioned only the fact that the death had occurred in London. No details were given. Miss Munroe applied for enlistment with the American contingent of Red Cross nurses, but was refused because she was English. Later she went to Toronto and joined the corps that accompanied the Canadian troops. She was sent to France and just a short time ago was sent to London, presumably en route to the Dardanelles.

In a recent discussion by members of the Louisiana State Board of Health of the question of whether pellagra is a communicable disease, Dr. Oscar Dowling, of Shreveport, president of the board, declared that, with the consent of his wife, he would kiss any good-looking woman in the state who was suffering from pellagra. The board decided to accept tentatively the government's contention that the disease is not communicable, but will continue research work with the view of establishing the facts in the matter for its own satisfaction. A pellagra hospital is soon to be established at Bogalusa. The city health authorities of Shreveport have taken the position that pellagra is a communicable disease and ruled that pellagra cases cannot be sent to the Shreveport Hospital.

More than fifty percent of the graduate nurses of Kansas marry during the first five years after graduation, according to Mrs. Alma R. O'Keefe, of Wichita, former secretary-treasurer of the Kansas State Board of Examination and Registration of Nurses. Mrs. O'Keefe strikes a blow, however, at the pretty romance which has grown up around nurses in the public mind, by declaring that most of the nurses who marry do not wed their patients. She says that there is no more likelihood of a nurse marrying her patient than of a girl in a store or a business office marrying one of the patrons of the establishment. Mrs. O'Keefe thinks Kansas leads the world in pretty nurses, and that they know how to dress just as well as their sisters in the eastern part of the country or anywhere else on the globe.

The Detroit Tuberculosis Sanatorium has been selected as one of twelve such institutions in which a special study of foods is being made by Miss Laura A. Cauble, of New York City. Miss Cauble, who is food expert of the bureau of food supply for the New York Association for Improving the Condition of the Poor, will conduct the investigation for the *Journal of Outdoor Life*, a monthly anti-tuberculosis magazine, cooperating in research work with the National Association for the Prevention of Tuberculosis. Miss Cauble will be assisted in her investigations by Dr. Donald Armstrong, of New York; Prof. Henry C. Sherman, of Columbia University; Prof. Graham Lusk, of Cornell University, and Dr. C. F. Langworthy, of the division of research and nutrition of the United States Department of Agriculture, and others.

Miss Annie M. Damer, widely known among trained nurses and the author of many articles on nursing, died at her home, No. 551 West One Hundred and Sixtieth street, New York City, as the result of injuries received several years ago in a runaway accident. Miss Damer was born in Canada about fifty-six years ago and formerly lived in Buffalo, where she was connected with the City Charity Organization. Going to New York, she was graduated at the Bellevue School for Nurses and entered social service work among tuberculosis patients. She was in charge of the Henry Street Settlement Farm, retiring because of her accident. She had also served as a member of the State Board of Examining Nurses. Miss Damer had been president of the National Association of Nurses and had served several terms as president of the Bellevue Alumnæ Society.

Greenpoint Hospital, an addition to the municipal hospital system of Brooklyn, N. Y., erected at a cost of nearly a million dollars, was opened in September. The commis-

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The result is whole-grain bubbles puffed to eight times normal size. They are thin and fragile, with a taste like toasted nuts. Folks revel in them.

But they are, above all, the best-cooked cereals in existence. The usual cooking process fails to break half of the granules. This breaks them all and fits them all for food.

The result, of course, is easy and complete digestion. You will wish, as we do, that all grains could be puffed.

The Quaker Oats Company
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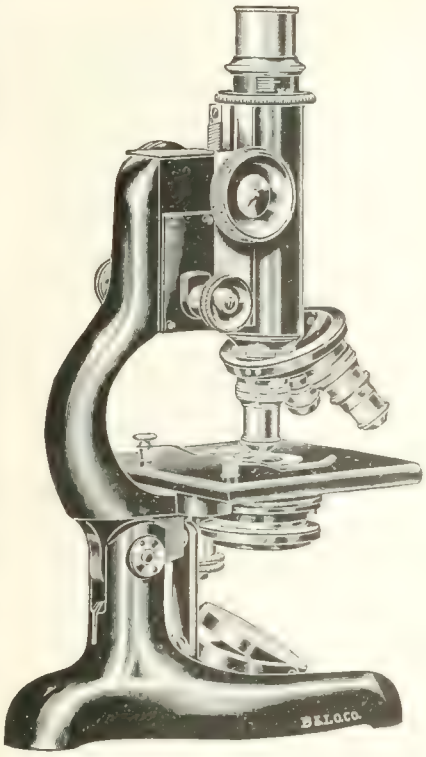
Puffed Wheat 12c
Puffed Rice 15c
Corn Puffs Corn Hearts Puffed **15c**
Except in Extreme West



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sion form of administration, under the guidance of an advisory board of six prominent physicians and surgeons of Brooklyn, has been adopted. The physicians composing the advisory board are Dr. William B. Brinsmade, Dr. Glentworth R. Butler, Dr. H. Beekman Delatour, Dr. Robert L. Dickinson, Dr. John C. McCorkle and Dr. Lewis S. Pilcher. Dr. Charles F. Sanborn, formerly of Chicago and Cincinnati, is the superintendent. The capacity of the hospital is 250 patients. A post-graduate training school for nurses will be established. The elaborate plant of the new institution has already been described at length in THE MODERN HOSPITAL.

Under a new law, which has recently gone into effect in Illinois, it is made the duty of the state board of administration to pass upon the licensing of all maternity hospitals in the state and to provide for the inspection and regulation of these institutions. The law requires that every maternity hospital after being licensed shall keep a register of all persons admitted, the date of birth of every child born on the premises, date of discharge of the mother and child, and if the child is placed in a foster home the name and address of the foster parents. If the child is legally adopted this information must be entered on the register. The state board may require any other information it sees fit, and a copy of all information demanded must be sent to the board on the first of each month. Free access to any maternity hospital must be given agents of the board at all times. No child born in one of these institutions may be placed in a family or legally adopted until an investigation of the proposed future home has been made by agents of the board of administration.

The Milliken Memorial Hospital, of New Orleans, which is the infants' department of the large Charity Hospital in that city, was recently struck by lightning. The bolt entered the building on an electric wire and sped along the wire to a combination gas and electric chandelier, striking and breaking the gas pipe. The mingled gas and electricity made a roar and crash that shook the building. Much confusion among both nurses and patients followed. Cool heads calmed the situation, however, although not until some of the occupants of the building had rushed out into the rainstorm. In the meantime a fire had gained headway inside of one of the walls of the building. John Ponder, chief engineer of the hospital, applied an axe to the wall and Superintendent Wilkins played a stream of water from a hose into the holes thus made. This procedure was repeated on another floor, and in half an hour the fire had been extinguished. The damage to the hospital amounted to about $200, but it was saved from destruction only by the quick work of Engineer Ponder and Dr. Wilkins. Forty children, varying in age from three weeks to two years, who were in wards directly above the fire, were threatened with suffocation by the dense smoke that arose, but all were safely removed.

The Swedish Hospital of Minneapolis recently completed an artesian well 867 feet deep and 10 inches in diameter. The well is cased with galvanized iron casing to a depth of 350 feet, at which point the casing is driven tight into the rock, thus completely shutting off all seepage from the surface. The water rises to within 30 feet of the top of the well, and is then pumped into an underground tank, from which it is forced by air pressure to all floors of the hospital. The old spring water coolers have been discarded from all parts of the hospital and sixteen bubbling cup fountains of the most approved type substituted. The water is kept constantly running in these fountains and is always of the right temperature for drinking. Each fountain has an auxiliary tap for filling glasses or jugs. The water from this well has been analyzed and found to be absolutely free from bacteria, and chemically it is excellent for drinking. As the city water bill of the hospital has been about $100 per month and the spring water expense about $25 per month, the hospital hopes to save the cost of the well and equipment —about $3,000—in a comparatively short time, and in the meantime will be serving its patients, nurses and employees with the very best water obtainable.

The proposal of the Committee on Governor and other state officers for reorganizing the state's charities was rejected by the Constitutional Convention at its recent meeting in Albany. The Convention voted to continue the Hospital Commission as a constitutional body.

Electric Dumbwaiters

can be installed at moderate cost in shafts now occupied by the old rope-hauling kind.

The cost, in fact, however they are installed, is as nothing when it is considered how much they mean to the hospital in

Superior Service
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Saving of Labor

To do without this feature of modern hospital economy is to go back to primitive methods of management.

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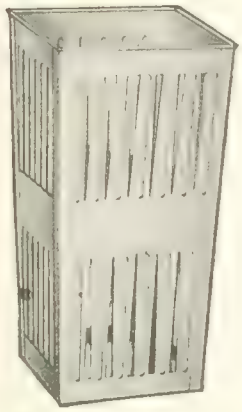
No. 1 is our regular White Enamel Basket. The openings in the sides run only part way down; small objects, therefore, cannot fall through. The basket can also be supplied without openings if desired.



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No. 2 is our White Enamel Towel Basket. Its construction and finish make it a very sanitary and attractive basket, and can be very easily cleaned.

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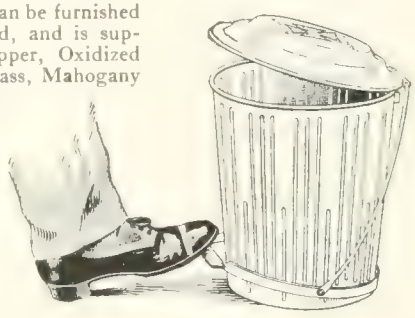

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It is made from Toil du Nord, blue gray Chambray, or Bates Seersucker, striped, at $1.85. Extra collars 15 cents additional. Same uniform made from a good quality linen-finish shrunk cotton, $2.00. Nurses' cap illustrated, made from heavy lawn, price $1.80 per dozen.

Our uniforms and aprons have been Standard for twenty-one years and are used by nearly all the leading hospitals throughout the United States and Canada.

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to the hospital or the individual nurse at wholesale prices. Every hospital superintendent or superintendent of nurses should write for our catalogue, showing styles and prices of our uniforms.

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When requested, replies will be received at the business office of THE MODERN HOSPITAL, Metropolitan Building, St. Louis, and will be forwarded promptly to the advertiser.

The charge is $1.00 for 30 words or less, and 3 cents for each additional word. For the convenience of both advertisers and publishers, classified advertisements are payable in advance.

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POSITIONS—Superintendents of hospitals, superintendents of nurses, etc., furnished hospitals anywhere in the world. No charge to Hospital Boards for this service. If you want nurses capable of developing your institution, why not let us put you in touch with the very superintendent for whom you are looking? We have the most competent hospital superintendents registered with us for advanced positions. If you need an organizer or teacher promptly, write us now. Aznoe's Central Registry for Nurses, 3544 South Grand Boulevard, Chicago, Ill.

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POSITION—As superintendent of medium-size hospital or large training school. Registered nurse with ten years' experience. Good organizer and disciplinarian. Excellent references. Middle West preferred. Address Superintendent, THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

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POSITION—As superintendent of a general hospital. Am at present assistant superintendent of one of the largest hospitals in this country. Am 45 years of age and have had seven years' experience. Address J. J. D., THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

POSITION—As superintendent of hospital or training school, or both, by graduate nurse with executive ability; or would take charge of an operating room in a general hospital. Address M. F. K., THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

POSITION—By operating room supervisor. Experience in surgical work, assistant's work or floor supervisor. Best of references. Address A. F. T., THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

POSITION—As superintendent of a general hospital and training school of about 100 or 150 beds by registered nurse with executive ability and experience. Will be able to accept new position December 1st. Address C. S. P., THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

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POSITION—As office nurse in physician's office by a graduate registered nurse with many years' experience in executive positions. Expert anesthetist and stenographer. Chicago preferred. Address B. E. H., THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

POSITION—By registered nurse of many years' experience, position as anesthetist for a surgeon in Chicago who would appreciate high class service. Best of references. Address G. A. R., THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

POSITION—By a registered graduate nurse of large Eastern hospital, position as superintendent of a hospital of about 150 beds. Have had excellent executive experience. Expert anesthetist, training school instructress and buyer of hospital supplies. Address C. F. M., THE MODERN HOSPITAL, Metropolitan Building, St. Louis.

POSITION—As dietitian in hospital wanted by graduate of the Home Economics Department of the Michigan Agricultural College. Practical work taken at the Grace Hospital, Detroit. Best of references. Address M. A. P., THE MODERN HOSPITAL Metropolitan Building, St. Louis.

Continued on page 48

THE MODERN HOSPITAL

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Showing the complete set of 15 Charts mounted in our patent "Utility" Spring Roller Rack, with Chart No. 3 drawn down.

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CLASSIFIED ADVERTISING.

Continued from page 46

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Continued on page 50

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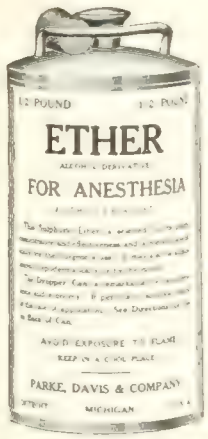

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Continued from page 48

MISCELLANEOUS—Continued

SAVE FROM 20 TO 40% OF YOUR HEATING EXPENSE—The Monarch Metal Weather Strip is shaped so that it will fit your doors and window sashes perfectly, closing all cracks and thus keeping out cold air, dust and soot. Won't rust, wear out or break. Write us for free booklet describing and illustrating Monarch strips. Monarch Metal Weather Strip Company, 4124 Forest Park Boulevard, St. Louis, Mo.

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KITCHEN ECONOMY—Economy in your kitchen demands that you have an efficient meat and food chopper. The use of this device saves much food that would doubtless otherwise be wasted, it keeps the juices in the meats, and it saves an enormous percentage in time and cost of labor. The Buffalo Meat and Food Chopper will cut cooked meat for hash in three minutes; cuts raw meat in five minutes without mashing it; and we will send it to you on thirty days' trial, paying freight charges both ways if not acceptable. You cannot afford to be without it in your kitchen. John E. Smith's Sons Company, 50 Broadway, Buffalo, N. Y.

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Continued on page 52

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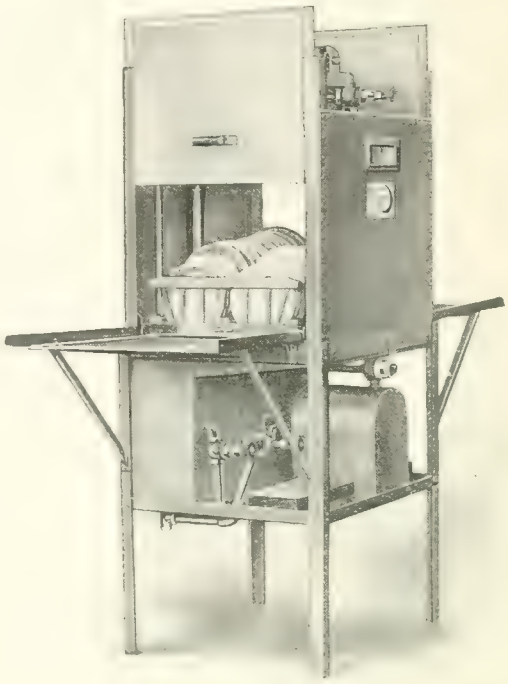
Noiseless—Rapid—Thorough
Easy to Operate



HOSPITAL MODEL A

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A dainty, attractively-served **Knox** Gelatine dessert or salad will often succeed in stimulating the appetite when ordinary foods fail.

Orange Jelly in Sections of Orange Peel

¾ teaspoonful KNOX Sparkling Gelatine
½ tablespoonful cold water
1 tablespoonful boiling water
¼ cup orange juice.
1 teaspoonful lemon juice
1½ teaspoonfuls sugar

Cut a circular piece of peel one inch in diameter from the stem end of an orange. Introduce handle of a silver spoon into opening thus made, and remove pulp and juice. Strain juice from pulp, and use in making jelly. The forefinger of the right hand may be of assistance in loosening pulp lying close to the skin, which should be discarded as it is apt to make a cloudy jelly. Proceed same as in making Lemon Jelly. Fill orange with mixture, place in pan, and surround with ice to which a small quantity of water has been added. As soon as jelly is firm, cut in halves lengthwise, and cut halves in thirds, arrange on serving dish on a lace paper doily, and garnish with glaced cherry.

(Trade Mark)

KNOX
SPARKLING GELATINE
(Granulated)

combined with other food substances, such as broths, finely chopped meats, nuts, fruits, fruit juices, wines, etc., forms the most appealing dishes and also provides easily assimilated nutriment.

That is the most generally recognized service of gelatine, but it has a further and very valuable purpose as an albumin and protein "sparer." This service is very helpful to the patient when every ounce of reserve strength is of importance.

For "between-meals" feedings **Knox** Gelatine meets a distinct need.

Knox Gelatine dishes make an appetizing, palatable and sustaining addition to the dining table of the hospital staff itself.

Knox Gelatine is very economical—each package makes two quarts (½ gal.) of Jelly, and besides Jelly, it makes Desserts, Puddings, Salads, Ice Creams, Sherbets, etc.

We will gladly send, free, a full-size package, together with our New Illustrated Recipe Book. This coupon for your convenience. Mail today.

Yellow Package

Blue Package

The contents of these packages are identical except the "Acidulated" (or blue) package contains an extra envelope of lemon flavoring, saving the cost of lemons.

NEW RECIPE BOOK and SAMPLE FREE

Chas. B. Knox Company, Inc.,
608 Knox Avenue, Johnstown, N. Y.

Please send me, FREE, a full-size package of Knox Gelatine and a Recipe Book of Desserts, Jellies, Puddings, Salads, etc.

Name .....

Address .....

CLASSIFIED ADVERTISING.

Continued from page 50

MISCELLANEOUS—Continued.

SANITARY BASKETS for all purposes. Your institution should be equipped throughout with our white enamel baskets, and we are sure we can supply your needs for every purpose. A few of our lines are illustrated in our advertisement on page 45 of this journal. Erie Art Metal Company, Erie, Pa.

THE FAULTLESS HOSPITAL CASTER—The new Faultless caster insures noiseless movement, easy turning and durability. The caster is pivot bearing and interchangeable. Our announcement on page 56 of this number shows a sectional as well as an exterior view of this new member of the "Faultless Family." Samples gladly sent on request. The Faultless Caster Company, Evansville, Ind.

IDEAL MATERIAL FOR ALL HOSPITAL FLOORS—Our Grueby nonslip, impervious flint tiles for floors are safe, sanitary, silent and indestructible. Send for our booklet, A 14, and write us in regard to any tile problem on which you may wish information. Grueby Faience and Tile Company, K and First streets, Boston, Mass.

THERAPEUTIC APPARATUS—The results attained by the Automatic Exerciser in the treatment of obesity and other disorders of metabolism commend it to the immediate attention of institutions and physicians generally. See illustration and further particulars on the third cover page of this journal, and write for our illustrated catalogue, which you will find useful as a reference book. Sanitarium Equipment Company, 210 Washington street, Battle Creek, Mich.

SAFETY OPERATING LAMP fitted with a powerful emergency gas light, which is available in an instant in the event of the failure of the electric current during the operation. See illustration and further particulars in our announcement on page 4 of this number. Hospital Devices Company, 95 River street, Hoboken, N. J.

A YEAR'S USE—Our rubber gloves will stand a year's use without deterioration, undergoing repeated sterilizations. If you cannot get them from your jobber, send us the name of your institution and we will send you a pair free. Massillon Rubber Company, Massillon, Ohio.

CHARTS FOR VISUAL INSTRUCTION—The modern hospital should have its nurse training school equipped with the Frohse life-size anatomical charts. Send for the free "Frohse Book," in which each chart is illustrated. A. J. Nystrom & Company, 623-633 W. Wabash avenue, Chicago.

THE SEASON FOR BLANKETS—Place your order now for borderless institution blankets, of which we make a specialty. We make these blankets of part wool and part cotton, to give them strength and durability. They will launder well and have the warmth of a wool blanket. Write for samples and prices. Rhoads & Fillman, 1020-24 Filbert street, Philadelphia, Pa.

Continued on page 54

H-O OATMEAL. Its purity means security. It is blended from the best oats, selected from the best oat-growing fields of the country. It is steam-cooked in sealed containers for two hours. Its package is sealed and sterilized. But 20 minutes on the stove makes it easily assimilated by even the very delicate.

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THE *ONLY* STEAM-COOKED
Oatmeal
The H-O Company, Buffalo, N.Y.
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is what makes it flexible, yielding, light, with no sacrifice of the strength needed to stand sterilization.

Our gloves will stand a year's use without deterioration, undergoing repeated sterilizations. We own the process that gives them this quality.

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Massillon Rubber Co.
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Designed by Mr. J. R. Coddington and too well known to require further detail.
Three sizes—$5.00, $7.50, $10.00.

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A complete record of the individual work of each nurse.
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One of the most important specifications is the quality of the White Enamel Paint. In the Operating Room, Laboratories, Wards, and all offices it must have a surface like porcelain and be hard as steel.

It must be aseptic, grainless and able to stand continuous washing and ordinary sterilization. It must have the enduring qualities of endless wear.

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White Enamel Paint

is unsurpassed in all those qualities which are demanded by the boards of trustees and the architects of modern hospitals. Kyanize White Enamel is the most durable, therefore the most economical paint for all hospital interior woodwork, metal, plaster, etc. It is not affected by thermal conditions and can be bought at a much lower price than the foreign kinds.

Write us for further particulars and any technical information to meet your need.

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The new square White Enamel bucket gives Kyanize a distinction from all other kinds. Pints, half pints and quarter pints in round cans.

CLASSIFIED ADVERTISING.

Continued from page 52

MISCELLANEOUS—Continued

METHOD OF CONTROLLING THE COOLIDGE TUBE FILAMENT TEMPERATURE Send for our new catalogue, which will be gladly forwarded on request. Waite & Bartlett Manufacturing Company, 252-58 West 29th street, New York, N. Y.

PRACTICAL RUGS FOR HOSPITALS—In actual wear the Kilmarnock, Thread and Thrum rugs are the best for hospital use. They are sanitary, durable, and artistic. Rugs suitable for all parts of your institution. See our announcement on page 10 of this journal. We will have our representative in your city call on you with samples at your request. Nye & Wait Kilmarnock Corporation, Auburn, N. Y.

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AGENCY FOR THE COOLIDGE TUBE—We have recently been appointed western sales agents for the Coolidge X-Ray Tube, the invention of Dr. W. D. Coolidge, assistant director of the Research Laboratory, General Electric Company, Schenectady, N. Y. Its use permits of results not obtainable with any other. Another important factor is the increased work which can be done with small generators through the use of this tube. Full information furnished on request. Scheidel-Western X-Ray Coil Company, 737-739 West Van Buren street, Chicago.

MILWAUKEE COUNTY TUBERCULOSIS SANATORIUM—Among the equipments for which contracts were awarded recently are our high-grade felt mattresses, also one hundred of the See See Inner Spring Mattresses, which are constructed with the idea of being especially appreciated by chronic invalids. Your institution should be on the list of hospitals which we supply. See our announcement on page 63 of this number. Cream City Bedding Company, 3200 Fond du Lac avenue, Milwaukee, Wis.

VALUABLE BOOK FREE—"The Art of Corsetry From a Medical Standpoint" is the title of an interesting book that is of value to hospital superintendents, physicians, and nurses. Sent free on request. The H. W. Gossard Company, 1204 Lakeview Building, Chicago.

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BAKER LINENS are stronger than those usually offered, being made especially for hospitals and institutions. Strong yarns and special weaving are two factors in their superiority. Our experience in supplying hospital needs is another.

Baker Linens will save you money both in first cost and in wear.

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is instantly attached *anywhere* and readily adjusted to insure a brilliant, workable light in any region the operator elects. At the same time the eyes are effectually protected from glare and strain.

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LATEST IMPROVED PATTERN

As seen from illustration, this Sterilizer is self-contained, and consists of a glass alcohol lamp with cap, a heavily tinned and nickeled spoon, and a nickeled stand.

The lamp is rigidly secured to the stand, but can be easily detached for cleaning. The cap is attached to the stand by means of a chain. The sterilizing spoon is adjustable in height by means of a thumb screw.

This arrangement enables the nurse to handle the whole outfit with one hand and assures against misplacing of the parts.

The price of this Sterilizer outfit, complete with lamp, etc. is $7.50 per dozen.

We will supply you with a sample for 65c

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MANUFACTURERS AND IMPORTERS OF
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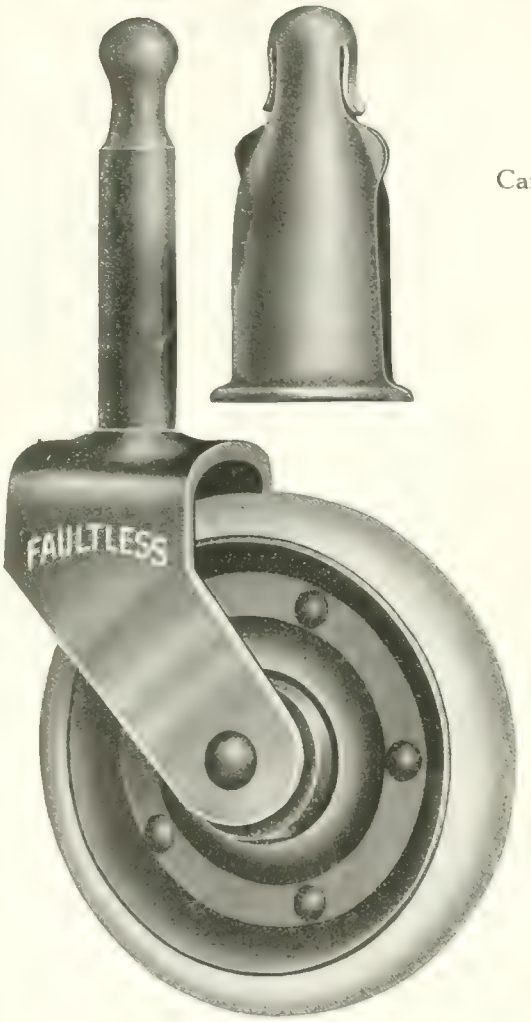

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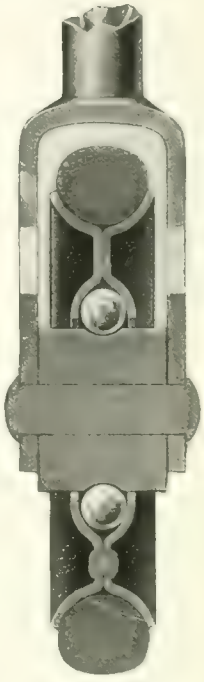

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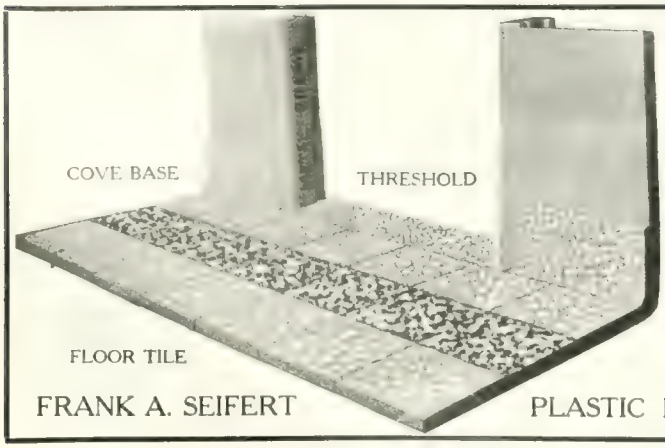

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Largest Makers of Fine Corsets

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THE temptation of a woman during maternity to yield to the dictates of fashion and wear a corset that may be harmful to her and to her child is an experience with which most every physician is familiar.

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Thanks to the Gossard Maternity Corset, such a woman may wear a corset that is at once fashionable and hygienic.

After twelve years of experimentation and close study, the advantages of the Gossard Maternity Corset were crystallized into the perfect corset of today.

In 1902 Mr. H. W. Gossard, President of The H. W. Gossard Company, introduced the front-lace corset, and aided by expert medical advice produced the first maternity corset that was correct along anatomical and physiological lines.

The medical profession was quick to appreciate the sanity, comfort, healthfulness and scientific practicality of the Gossard Maternity Front-lacing Corset.

Each model of the Gossard Maternity Corset is constructed to conform to the most advanced scientific views of the medical profession.

The Gossard Maternity Corset is made to help the abdominal muscles, working with them in the support of the viscera **without compression**, and an aid to correct poise so that the center of gravity will be properly placed; thus preventing static backache and other symptoms which are the result of strained position.

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Broad, comfortable shoulder straps are used on this model. When the weight is heavy, this model is desirable. Special flexible featherbone is used in front. Five separate adjustments, three in front and one on each side, permit of accurate daily adjustments. A soft French Batiste material is used. Sizes 24 to 40. Even sizes.

This Model $5.00

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Constructed along the same general lines as Model 303, but higher in the bust and at back. Has three adjustments, as illustrated. Developed in a soft Sterling Cloth. Natural figure lines can be maintained longer and with perfect safety to mother and child. Sizes 24 to 40. Even sizes only.

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This book is recommended to the specialist, the practitioner, the nurse and the nurse in training. It will be sent without charge upon request.

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"In Caring for the Feet",

recently said a well know physician who devotes special attention to foot troubles, "I have found that

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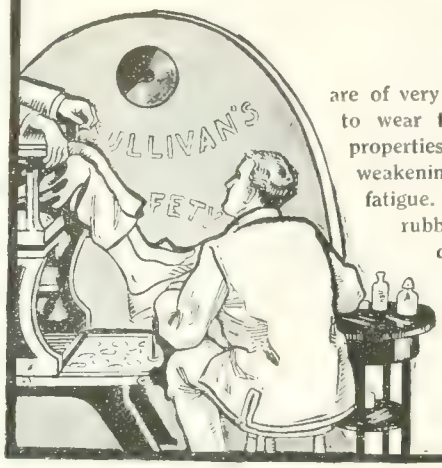

are of very pronounced value. I urge my patients with foot ailments to wear them regularly, for their resiliency and shock-absorbing properties assure the relief of muscular tension with its tendencies to weakening of the foot muscles and the development of excessive fatigue. I have proven, moreover, to my entire satisfaction that rubber heels in helping to restore and maintain foot health, contribute in no uncertain way to the general comfort and well being."

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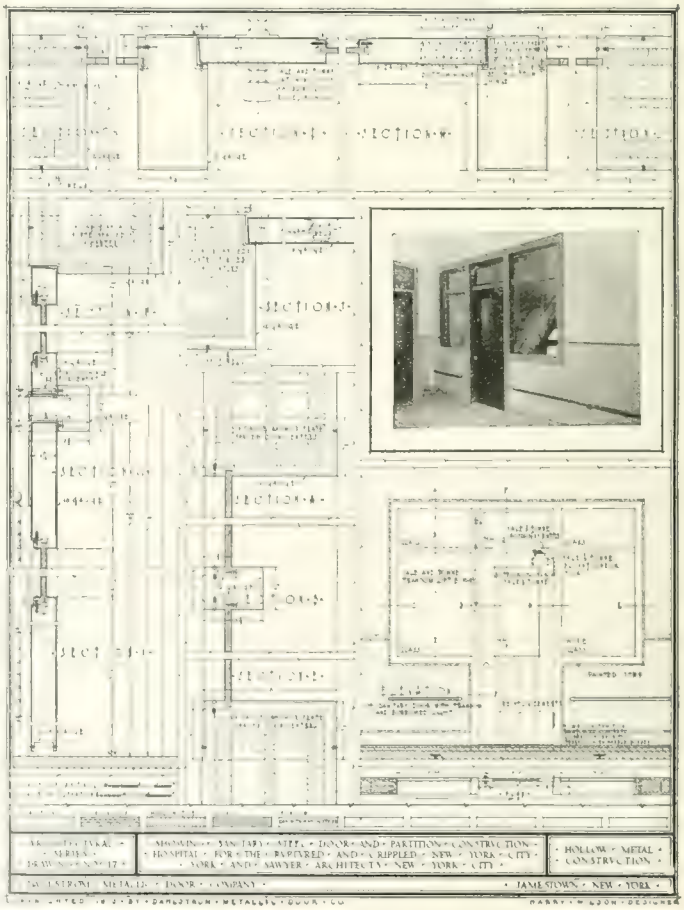

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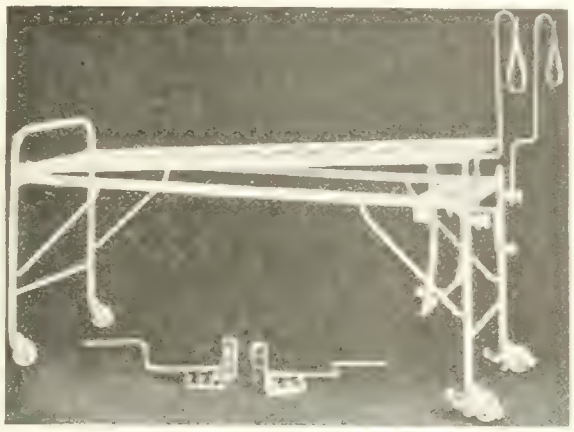

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Kornlet is the concentrated milk of a choice variety of green sweet corn. It is tempting and delicious, and presents the elements of nutrition in such a form that it is readily assimilated by the digestive organs.

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ARE your medicines kept in as good order as those in this prescription case?

Hess cabinets are made for every purpose. They are a wonderful factor in inspiring cleanliness and system among employees.

They are all-steel, with four coats of white enamel baked on. Every part is built to stand wear; every door and drawer pulls easily and yet fits snugly, socketwise, so that not even fine dust can enter.

Let us show you how we can save you space with a Hess recessed cabinet.

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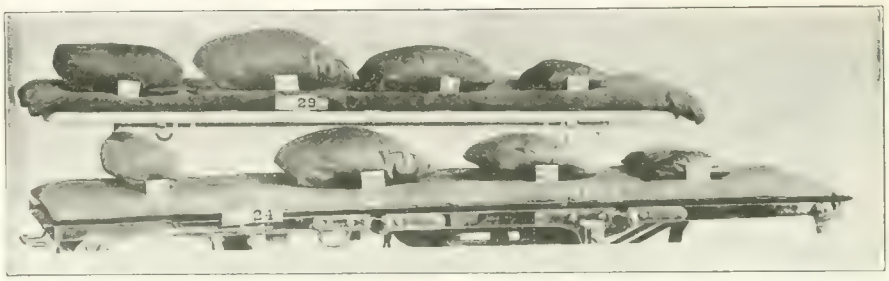

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made that is a *positive guarantee* against any patient ever having a back-ache after an operation, which is caused by relaxing on the operating table with the spinal column unprotected.

Our Back Rest and Table Pads assure your patient comfort and ease.

Send for a trial set to be used 30 days. If not as we say you may return it.

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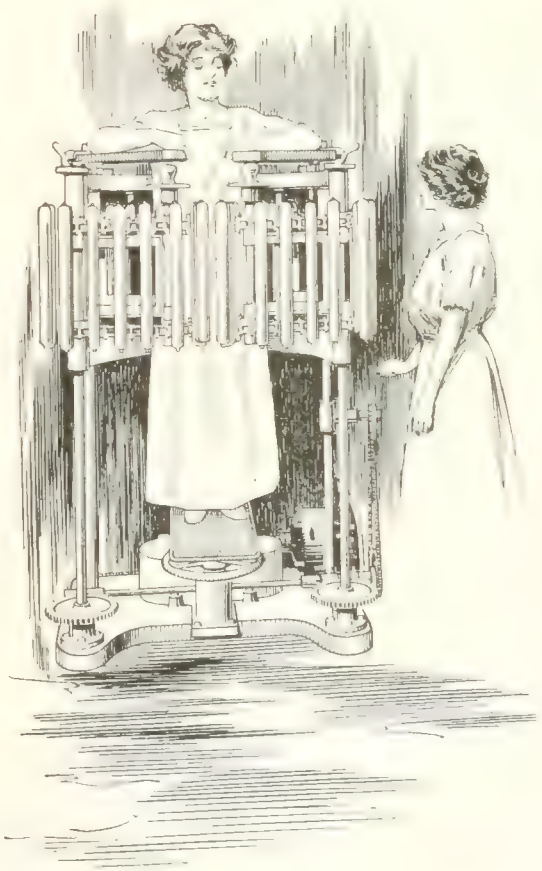

This machine is invaluable in all cases of poor circulation or faulty elimination and wherever exercise is indicated.

It will reduce blood pressure and is a specific for corpulency.

It is of great value in toxemia, locomotor ataxia or weak heart action. It will afford almost immediate relief for difficult breathing caused by fatty accumulation about the heart.

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Keep them in Berger's Steel Lockers. They are attractive in appearance, save valuable space, are strongly yet simply constructed, withstand hard usage, are sanitary, and safeguard their contents from fire, rodents, vermin and pilferers. Your patients and your staff will appreciate them.

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Profit by our experience and let us help you solve your clothing storage problems.

Having unusual facilities, you will receive the benefit of economical production as well as the utmost in locker service and quality.

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Efficient, Economical Ironing

The Simplex is the modern economical way to iron. Gives the best and quickest results. The Simplex Ironer saves wages. ***One*** inexperienced girl does the work of four ironing by hand.

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"THE BEST IRONER"

Costs nothing for upkeep. Noiseless, efficient and simple. No additional help needed when you are crowded.

Sizes to suit any hospital up to 150 beds. Price, $45.00 and up. Cost of the Simplex is quickly saved.

Free estimates and plans for complete laundry installations, including Washers, Extractors, Wringers, Dryers and Ironers.

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A new and wonderful impermeable dressing
Far superior to gutta-percha tissue or oiled silk

Impermephane is strong, tough, flexible, soft, light and is perfectly transparent. It does not crack, break or stick. Can be boiled or steam sterilized. Does not deteriorate with age. Will keep in any climate.

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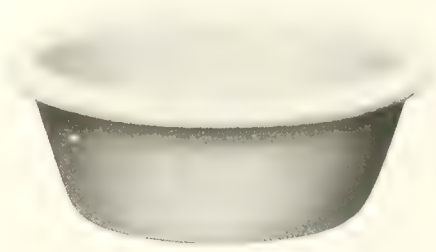
Better than the best earthenware—

better than imported—unbreakable by heat—almost unbreakable by force. Such is



LARGE BAKING DISH

HALL'S COOKING CHINA

LEADLESS GLAZE—VITREOUS—NON-ABSORBENT

OVAL BAKER

It is acid-proof and fire-proof. *It can not craze.* It can never, through either crazing or chipping, become absorbent. It is, and will remain, positively sanitary.

HALL CHINA CO., East Liverpool, Ohio

"PROVEN BEST BY THE CAN-OPENER TEST"

ESTIMATING

Quite a few hospital buyers have told us that they have some difficulty in estimating their canned food requirements in advance.

To such we will be glad to give the benefit of our experience along these lines. It might help to solve a puzzling problem.

A personal interview or correspondence with reference to this important subject would in no way imply an obligation to buy.

Write to Hospital Supply Dept.

The Coast Products Co.
406-408 Market St. St. Louis, Mo.

A COMPLETE LINE OF FRUITS AND VEGETABLES

Are You Buying Alcohol Free of Tax?

Do you know that a law provides its use free of tax for Universities, Colleges and Hospitals, which may apply to you?

F. O. BOYD & CO.
433 Washington Street
NEW YORK CITY

have made a specialty of this business for a great many years and will be glad to furnish you with all the details
FREE OF COST

Killing Flies Wholesale

BORAX is what does it. Recent experiments of the United States Department of Agriculture have demonstrated this definitely.

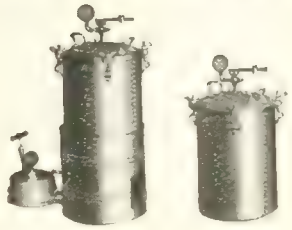
TWO OUNCES OF 20 MULE TEAM BORAX

applied to the garbage can, or ten ounces applied to eight bushels of fresh manure, will accomplish this.

It is a pure, trustworthy product, put up conveniently and sold cheaply by

PACIFIC COAST BORAX CO.
CHICAGO NEW YORK OAKLAND, CAL.

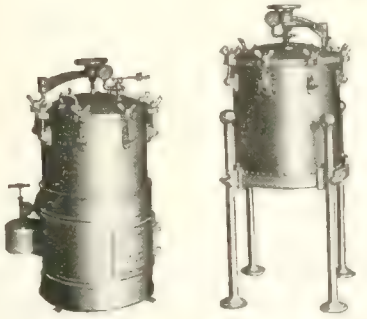
"NATIONAL" HIGH PRESSURE STERILIZERS



$35 With Burner **$15** Without Burner

DOCTOR'S SIZE

Capacity: 1350 Cubic Inches



$50 With Burner **$30** Without Burner

MEDIUM SIZE

Capacity: 2475 Cubic Inches

$85 With Burner **$65** Without Burner

HOSPITAL SIZE

Capacity: 7620 Cubic Inches

Shipped on Free Trial

Price is not a measure of quality. The "NATIONAL" High Pressure Sterilizers do as perfect work as the high-priced high pressure sterilizers with which all medical men are familiar. And they are so inexpensive that even the practitioner in extremely modest circumstances may have one.

A temperature of 260 degrees Fahrenheit can be maintained for 20 minutes, insuring the destruction of all spore-forming and other micro-organisms. Think of the confidence that comes with knowing that every glove and sponge and dressing you use is as free from surgical germs as the expensive sterilizers of a big hospital could make them. *And dressings are turned out "bone dry."*

These are strong statements, but we are ready to back them up by sending you a "NATIONAL" on 10 days' FREE TRIAL. Test it any way you please. If satisfactory, send us the price. If not, return at our expense. Isn't that a fair proposition? Could we afford to make it if the "NATIONAL" would not stand the tests?

Nine "NATIONALS" were ordered some time ago for the American Red Cross. Hundreds are being ordered by your professional associates. Send for complete information. Just fill out the coupon and mail it today.

"Nationals" Are Handled By All Dealers

Northwestern Steel & Iron Works

617 Spring Street Eau Claire, Wisconsin

Fill Out This Coupon—Cut Out—and Mail

NORTHWESTERN STEEL & IRON WORKS
617 Spring Street, Eau Claire, Wis.

Gentlemen:—Please mail me complete information about "NATIONAL" High Pressure Sterilizers.

Name_____

Street and City_____ State_____

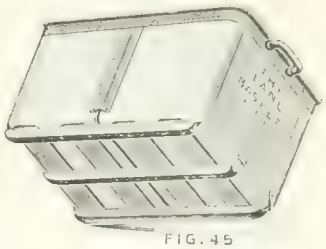


FIG. 45

LANE CANVAS LINEN BASKETS

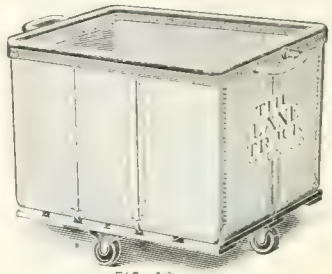


FIG. 48

Years of experience have shown many users of Lane Canvas Baskets their value—

How they wear and the true relations between **first cost** and their **years of service.**

That the Lane Basket is a **sanitary** basket and can easily be kept so.

Made in all sizes and in many different styles, to suit every requirement.

SEND FOR CATALOG

W. T. LANE & BROTHER, Manufacturers, Poughkeepsie, N. Y.

15

requirements met

in Keystone Brand Floor Covering.

They are listed below. Look through this list of merits carefully.

Keystone Brand Floor Covering

can be laid by any orderly or other employee under your direction. It

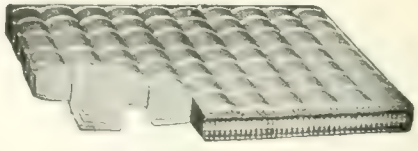
[illegible]	Preserves floors.
[illegible]	[illegible] other floor coverings.
[illegible]	[illegible]
[illegible] waterproof	Does not collect dust.
Deadens [illegible]	Does not dry out or rot.

KEYSTONE ROOFING AND MFG. CO.
Box 546, YORK, PA.

Each compartment of the

DIXIE NoTUFT Compartment Mattress

is separately filled. The amount of filling for each is weighed. Those compartments which have the most wear contain the most filling. ***It is scientifically built.***



WILL NOT SPREAD
NO DIRT POCKETS
NO TUFT TO PULL OUT

The Ideal Hospital Mattress

DIXIE

NEW YORK
Pearl and Prospect Streets
Borough of Brooklyn

CHICAGO
21st Street and
Centre Avenue

PITTSBURGH
37 Terminal Way

Original 20th Century Soap for Hospitals

The most economical soap for Hospitals—and the one cleanser that will serve every purpose—for cleaning wood, marble, and tile floors; woodwork, furniture, and all finished surfaces; as well as for the laundry, kitchen, and bath—the one all-purpose Hospital Cleanser.

Absolutely Pure—No Lye

Original 20th Century Soap contains no free oil or free alkali. It is manufactured from absolutely pure vegetable oils, and contains no animal fats or grease, or adulterations of any kind.

Rapidly removes dirt from painted, varnished, and enameled surfaces. Gives a luster to woodwork, furniture, and hardwood floors equal to an oil or polish, cleaning at the same time, leaving them uncolored and unstreaked.

Equally serviceable in the laundry—does not shrink woolens, and keeps them soft.

Write for prices and see why Original 20th Century Soap is the most economical you can use.

Theo. B. Robertson Soap Company, Inc.

Manufacturers of Cleansing Materials for all Purposes

700-704 West Division Street **CHICAGO, ILL.**

Western Office: M. M. CLARK, Manager, 903 N. Main Street, LOS ANGELES, CAL.

Ziola HIGH-POTENTIAL ROTARY CONVERTER

A DISTINCT ADVANCE IN X Ray Machines

The Opinion of an Eminent Surgeon

DR JOHN B MURPHY
2526 CALUMET AVENUE
CHICAGO

April , .

Ziola-Jackson X-Ray Coil Co.,
Madison, Wisconsin

Gentlemen:

[illegible] X-Ray apparatus [illegible] for nine months [illegible] at a call for assistance, we find that it fulfills in every respect the contract and the promises you made for it. We have had other types of apparatus in operation, but never before have we found one that could stand up under the strain of daily work as does the Ziola. We recommend it [illegible]

Yours sincerely,

J. B. Murphy

Ziola-Jackson X-Ray Coil Co. 110 North Hamilton Street MADISON, WISCONSIN

DIRECTORY OF SANATORIUMS—INSTITUTIONS FOR NERVOUS AND MENTAL DISEASES

DR. MOODY'S SANITARIUM, San Antonio, Texas.

For Nervous and Mental Diseases, Drug and Alcohol Addictions, and Nervous Invalids Needing Rest and Recuperation.

Established 1903. Strictly ethical. Location delightful summer and winter. Approved diagnostic and therapeutic methods. Modern clinical laboratory. 7 buildings, each with separate lawns, each featuring a small separate sanitarium, affording wholesome restfulness and recreation, indoors and outdoors, tactful nursing and homelike comforts. Bath rooms en suite, 100 rooms, large galleries, modern equipments, 15 acres, 350 shade trees, cement walks, playgrounds. Surrounded by beautiful parks, Government Post grounds and Country Club.

G. H. MOODY, M. D., Supt. T. L. MOODY, M. D., Res. Phys. J. A. McINTOSH, M. D., Res. Phys.

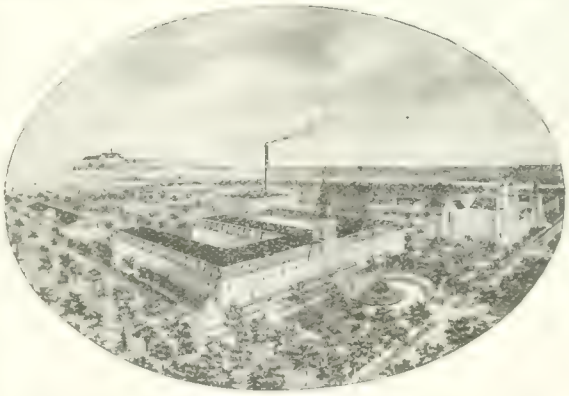
Waukesha Springs Sanitarium

FOR NERVOUS DISEASES

BYRON M. CAPLES, M. D.
Superintendent

Building Absolutely Fireproof

WAUKESHA, WIS.



SANITARIUMS

SACRED HEART SANITARIUM—For medical and neurological cases.

ST. MARY'S HILL—On separate side five blocks west. For drug and mild mental cases. Seven departments permit proper classification.

Both institutions conducted by Sisters of St. Francis of St. Joseph's Convent.

For booklet address Sister Superior or

DR. S. S. STACK, MED. SUPT., MILWAUKEE, WIS.

Main Building

WALDHEIM PARK

A quiet, restful and homelike sanatorium having the most approved and modern equipment for the treatment of chronic and nervous diseases. It is ideally located in a beautiful 35-acre park on the north shore of Oconomowoc lake, with its own training school for nurses.

For further information address

DR. J. H. VOJE
Physician in Charge
Oconomowoc, Wis.

One of the Cottages

Oakwood Springs Sanitarium

The Lake Geneva Sanitariums

Lake Geneva
Wisconsin

Lakeside Sanitarium

Comprising two separate Hospital-Sanitariums, having separate buildings and separate grounds under one management, for the care of Nervous, Mental, and Habit Cases

OAKWOOD SPRINGS SANITARIUM—For mental and nervous cases requiring guardianship. All rooms are private, and each patient may have a room or suite, as may be required. There are no wards. Utmost freedom of house and grounds is afforded. Many of the most pleasant rooms can be entirely isolated from all others. A number of the bed rooms have private baths. The plumbing, heating, and electric lighting are new and modern. Superior system of ventilation. The building is fireproof. There are private parlors and dining rooms, trained nurses, teachers and masseurs. Located in beautiful park of seventy-three acres, overlooking the lake and city. No crowding is at any time permitted.

LAKESIDE SANITARIUM—For medical and general sanitarium cases requiring specialized treatment for nervous and mild mental diseases, with two buildings and grounds of ten acres, charmingly situated on the shores of the lake. Every useful form of bath and hydropathic procedure is provided, together with gymnastic exercises, Swedish movement and massage. Mental exercise and drills, together with requirements of physical and mental performance, are promoted, with a view to restoring, strengthening, or developing the faculties, particularly those of perception and will.

An invitation is extended to superintendents and hospital physicians to refer to us such of their nervous and mental disease patients as cannot be satisfactorily cared for in general hospitals. Our institutions are completely equipped and efficiently administered for these classes of patients; furthermore, the extent, topography, and beauty of the grounds and the advantages of Lake Geneva climate have a most salutary influence.

TO SAVE TIME, Hospital Superintendents and Physicians who refer patients to us are requested to call Superintendent or Assistant by long-distance telephone (Lake Geneva, 159) and direct operator to reverse the charges when wishing to inquire concerning the admission of patients. When notified of the time of expected arrival in Lake Geneva, carriage will be sent to the station to meet patients arriving.

For further information address

DR. OSCAR A. KING, Superintendent, LAKE GENEVA, WIS.

Or at Private Office, 7 West Madison Street, Corner State Street

Phone, Central 2508 **CHICAGO, ILL.**

OCONOMOWOC HEALTH RESORT

OCONOMOWOC, WISCONSIN

Built and equipped for treating **Nervous and Mild Mental Diseases**

Main line Chicago, Milwaukee & St. Paul Ry., 3 hours from Chicago—5 minutes from interurban line between Oconomowoc and Milwaukee

NEW, ABSOLUTELY FIREPROOF BUILDING

Forty-three acres of natural park surrounded by lakes and tree-covered hills. Situated in the garden spot of Wisconsin, the playground of the Central West. A beautiful country in which to convalesce. Number of patients limited, assuring the personal supervision of the resident physician in charge.

ARTHUR W. ROGERS, B. S., M. D.

Hammock Invalid Bed

THE ALLISON LINE

of

Physicians' Equipment and Hospital Supplies is COMPLETE, UNEXCELLED, and GUARANTEED

AUTOMATIC TABLES AND CHAIRS
INSTRUMENT AND MEDICINE CABINETS
DRESSING STANDS, IRRIGATORS

RECEPTION ROOM FURNITURE
Vibrators, Sterilizers and Accessories

Special Discounts to Hospitals *Send for Catalog*

HAMMOCK AND FRACTURE BEDS

W. D. ALLISON CO., Mfrs.

958 North Alabama St., Indianapolis, Ind.

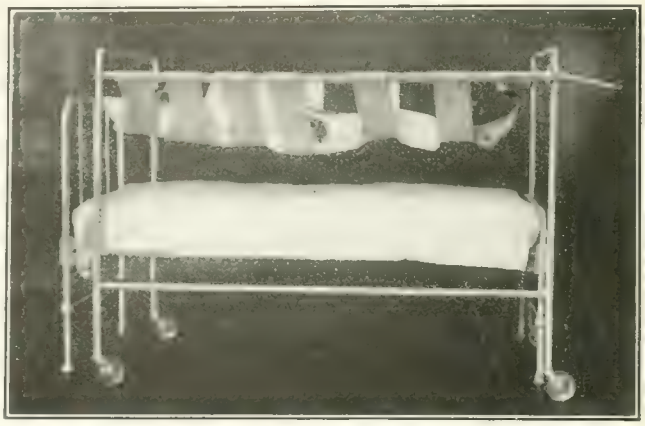
Style 128

Rolling and Invalid Chairs

DISPLAY SAMPLES AT REDUCED PRICES

Nursing is made easy by the

FLOYD INVALID LIFTER



WITHOUT mechanical knowledge nor the use of any tools, a nurse can place a FLOYD LIFTER over a bed and lift a patient above the mattress and linen so that both can be removed from the bed, as shown by the accompanying illustration. The lifting rollers rotate together or separately, so that a patient can be turned on his side. When a patient has been lifted from the bed, neither he nor the LIFTER has any connection with the bed, so that the LIFTER carrying the patient can be removed to another bed, chair, bath or operating table with perfect convenience. When this LIFTER is not being used, it can remain on the bed, as the rollers can be removed in a moment so that nothing is in the way of patient or nurse.

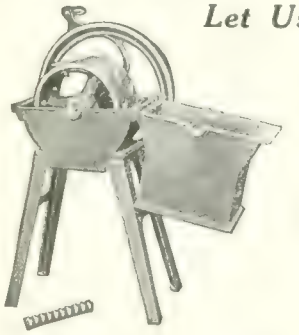
This LIFTER is invaluable as a convenience for the nurse, and is also a source of wonderful comfort for the patient.

It has been purchased by many of the largest hospitals in this country, including the United States Army and Marine Hospitals and the American Red Cross. Write us for illustrated catalog.

THE FLOYD INVALID LIFTER COMPANY, Inc.
STAUNTON, VIRGINIA, U. S. A.

HOSPITAL MANAGERS!

Let Us Convince You



We say a LITTLE GIANT Ice Chipper or Breaker will pay for itself several times over in a year; we say it will promote better service by giving you chipped ice in an instant where it now takes from 30 minutes to one hour to produce it. Further, we know the labor, the time and the ice you will save will astonish you.

So We Will Do This:

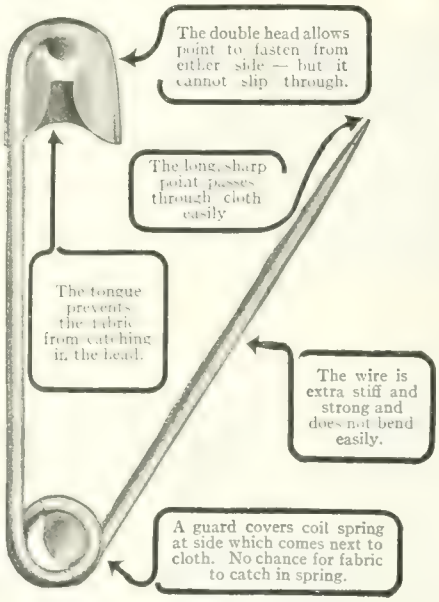
Send you a machine on a 10-day free trial. If in that time the LITTLE GIANT does not prove its superiority over all other makes and does not do all we claim for it, you can send it back at our expense.

Tell us the amount of ice you use daily, and in what form, and we will send the machine you need, or write for Catalog No. 20-A.

Jobbers and salesmen wanted

B. L. SCHMIDT COMPANY
Davenport, Iowa, U. S. A.

Stewart's Duplex Safety Pins


The double head allows point to fasten from either side — but it cannot slip through.
The long, sharp point passes through cloth easily
The tongue prevents the fabric from catching in the head.
The wire is extra stiff and strong and does not bend easily.
A guard covers coil spring at side which comes next to cloth. No chance for fabric to catch in spring.

Send for Free Samples of Stewart's Duplex.

Made of superior higher grade of brass wire. Will not bend or unfasten easily. Both head and coil are absolutely protected by the guards. Rust-proof. We manufacture all grades and sizes of Safety Pins. Pack them especially for Hospital use—5 gross in a substantial box—loose—ready for use at a moment's notice.

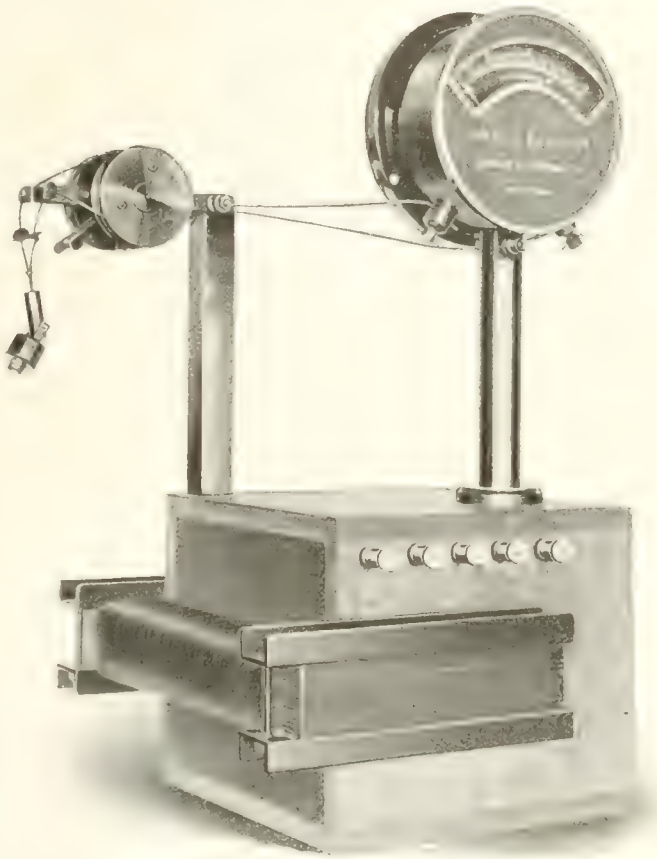
Samples and price list free on application.

BANK PINS

Minimum shipment of safety pins, 25 gross.

Stewart's Paragon Brand "bank" or toilet pins, packed in handy half-pound boxes, are indispensable in the modern hospital.

CONSOLIDATED SAFETY PIN CO.
BLOOMFIELD, N. J., U. S. A.



ORIGINAL COOLIDGE TUBE TRANSFORMER

for A. C. or D. C.

Ideal method of controlling the Coolidge Tube Filament temperature.

Ammeter scale, 3-5.

Prompt delivery—will operate with any make of apparatus.

Send for new catalogue

Waite & Bartlett Mfg. Co.

252-254-256-258 West 29th St.

NEW YORK CITY

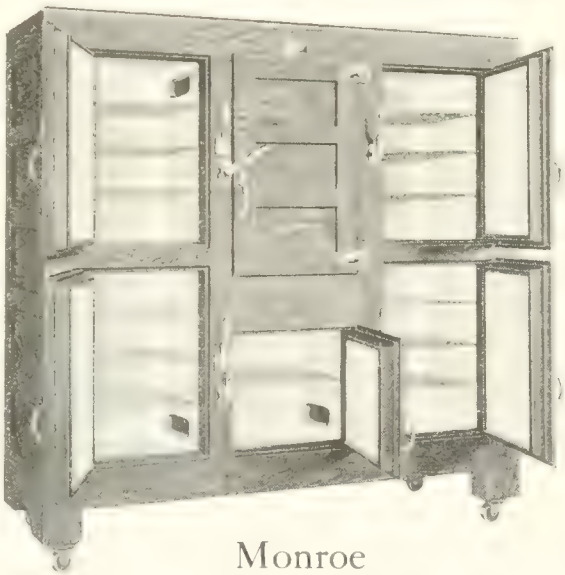
New York.
St. Luke's Hospital, New York City.
Mt. Sinai Hospital, New York City.
Manhattan Maternity Hospital, New York City.
Bellevue and Allied Hospitals, New York City.
Post Graduate Hospital, New York City.
St. John's Hospital, Brooklyn.
Utica State Hospital, Utica.
St. Joseph's Hospital, Elmira.
St. James' Mercy Hospital, Hornell.
Mt. St. Mary's Hospital, Niagara Falls.
Vassar Brothers' Hospital, Poughkeepsie.

Massachusetts.
Massachusetts General Hospital, Boston.
St. Margaret's Infirmary, Boston.
Corey Hill Hospital, Brookline.
Memorial Hospital of Harvard College, Cambridge.
Wesson Maternity Hospital, Springfield.
Williams College Infirmary, Williamstown.
St. Luke's Hospital, New Bedford.
Memorial Hospital, Worcester.
McLean Hospital, Waverly.
Heywood Hospital, Gardner.
Fall River Hospital, Fall River.
Homeopathic Hospital, Newburyport.

Pennsylvania.
Howard Hospital, Philadelphia.
Williamsport Hospital, Williamsport.
Pottsville Hospital, Pottsville.
Robt. Packer Hospital, Sayre.
Shenango Valley Hospital, New Castle.

New Jersey.
St. Vincent's Foundling Hospital, Montclair.
Isabelle McCosh Infirmary, Princeton.

Maryland.
Johns Hopkins Hospital, Baltimore.
Harriet Lane Hospital, Baltimore.



Monroe Solid Porcelain Refrigerators

are used by the hospitals listed in this advertisement because their

Superior Sanitary Features

commend them to those who appreciate the proper safeguarding of food supplies.

Our experts are ready to co-operate with you in every way. May we send you full information?

MONROE REFRIGERATOR COMPANY
Established 1868
312 Benson St., Lockland, Cincinnati, Ohio

Ohio.
Longview Hospital, Cincinnati.
Ohio Hospital, Cincinnati.
Dr. C. R. Holmes Hospital, Cincinnati.
Jewish Hospital, Avondale, Cincinnati.
Dayton State Hospital, Dayton.
Mercy Hospital, Hamilton.
Youngstown Hospital, Youngstown.

Indiana.
L. L. Culver Union Hospital, Crawfordsville.
Reid Memorial Hospital, Richmond.

Washington, D. C.
Episcopal Eye, Ear and Throat Hospital.
Providence Hospital.

Michigan.
St. George Hospital, Iron Mountain.
Sault Ste. Marie Hospital, Sault Ste. Marie.
Oakland County Hospital, Pontiac.
D. A. Blodgett Home for Crippled Children, Grand Rapids.
Emma L. Bixby Hospital, Adrian.

Illinois.
St. Luke's Hospital, Chicago.

Virginia.
U. S. Naval Hospital, Norfolk.
King's Daughters' Hospital, Portsmouth.

West Virginia.
Miners' Hospital No. 1, Welch.

North Carolina.
State Hospital of North Carolina, Morgantown.
Clarence Barker Hospital, Biltmore.
Watt's Hospital, Durham.

Kansas.
Bethel Hospital, Newton.

California.
California Women's Hospital, San Francisco.
Good Samaritan Hospital, Los Angeles.

Connecticut.
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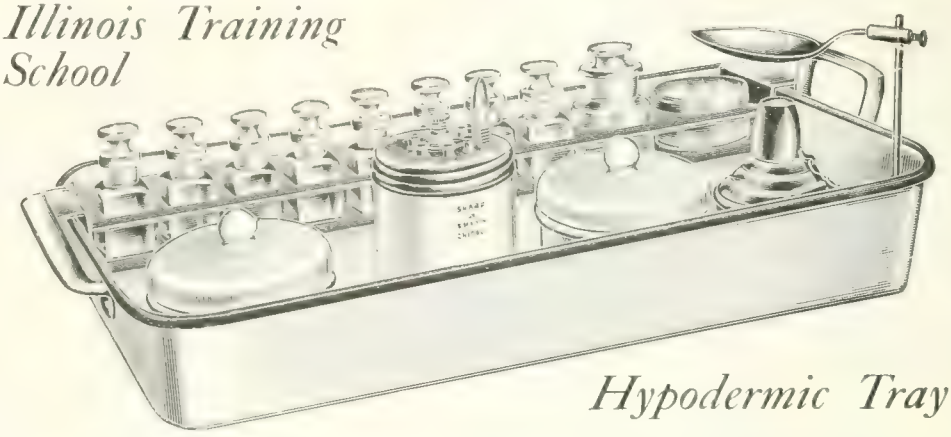
Illinois Training School



Hypodermic Tray

In connection with the assortment of articles that go to make up this tray, we believe it will prove to be a valuable and essential outfit from many standpoints in simplifying hospital work and furnishing every article necessary to the finger-tips of the nurse for administering hypodermic solutions in a thoroughly antiseptic way.

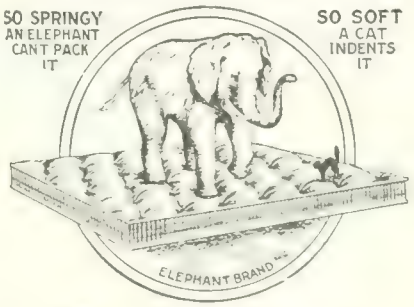
Write for Descriptive Circular and Prices

SHARP & SMITH

Manufacturers and Importers of High Grade Surgical Instruments and Hospital Supplies

155-157 N. Michigan Boulevard CHICAGO, ILL.

The Height of Bed Comfort



The "See See"

Inner Spring Mattress

prevents patients from becoming *bedsore*. The ONLY mattress for *Chronic Invalids*.

Write to Department H, how to obtain one for your institution free, to demonstrate.

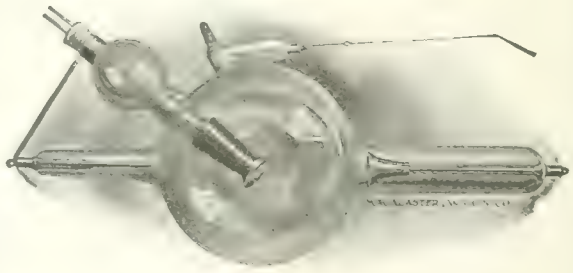
Send For Catalogue

Cream City Bedding Company

MILWAUKEE, WISCONSIN

We specialize in high-grade Hair and Felt Mattresses and Bed Springs

Water-Cooled Tungsten Target Tubes

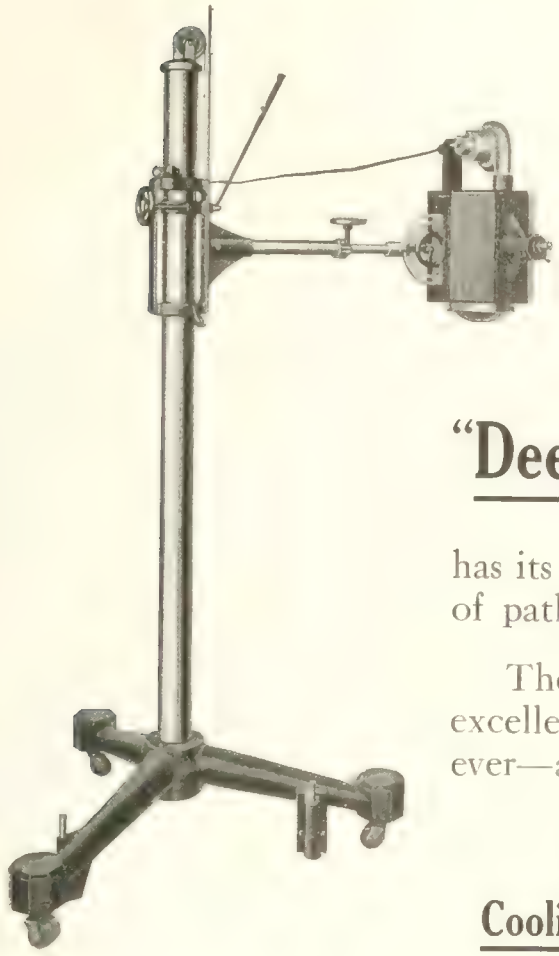


Send for Catalogue

Macalaster-Wiggin Company

66 Broadway CAMBRIDGE, MASS. Formerly Boston

154 West Lake Street CHICAGO, ILL.



"Deep" Roentgentherapy

has its distinct place in the treatment of pathological conditions.

The Coolidge Tube has made this excellent method more popular than ever—and with this

SCHEIDEL-WESTERN
Coolidge Tube Treatment Stand

the Roentgenologist can be assured of apparatus which will amply handle work of this kind—in a safe, efficient and extremely simple manner.

Protection is the key-note—every possible defense has been incorporated, taking this worry entirely from the hospital staff.

Your hospital cannot well afford to lag behind—you will find more and more cases of this kind coming up—and it behooves you to be prepared—not only to handle them, but TO HANDLE THEM IN THE BEST POSSIBLE WAY.

MAIL THE COUPON

SCHEIDEL-WESTERN X-RAY CO.,
737-739 West Van Buren Street, CHICAGO, ILL.

GENTLEMEN:—Please mail me your descriptive folder of the **Coolidge Tube Treatment Stand,** and show me how it will benefit the hospital.

_____

_____

_____

RAPID *and* ACCURATE DIAGNOSIS

can be made by using Cramer N P (New Process) X-Ray Plates because of their good quality and mechanical perfection.

CRAMER N P X-RAY PLATES

"The Plate of Dependable Definition"

represents an emulsion particularly adapted for X-energy, either with or without intensifying screen.

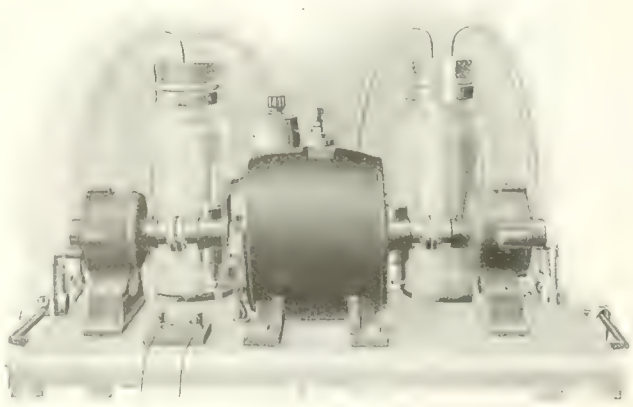
Send for free authoritative technical X-Ray booklet and prices to Hospitals

G. Cramer Dry Plate Company
ST. LOUIS MISSOURI

The Beck-Mueller Ether Vapor and Suction Apparatus

would be of immense value in your operating room.

The ideal apparatus for administering warm ether vapor in all operations about the nose, mouth or throat.



The continuous suction makes sponging with swabs unnecessary.

V. MUELLER & COMPANY, 1779 Ogden Avenue, Chicago

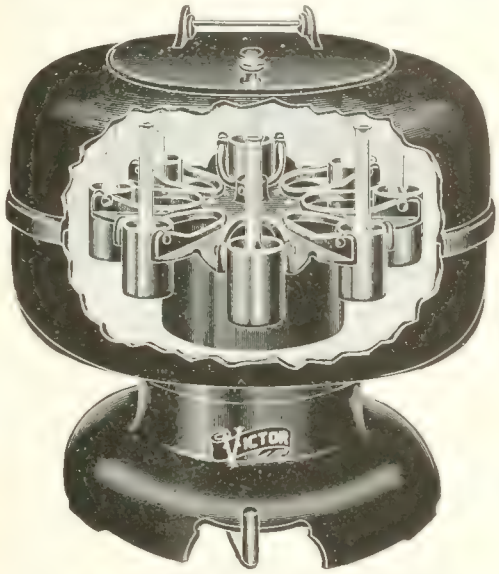
QUALITY

VICTOR CENTRIFUGES

SERVICE

— ANNOUNCEMENT OF THREE NEW MODELS —

— and a complete line of accessories up to and including 50cc capacities —



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2 tube 15cc heads	2 tube 50cc heads
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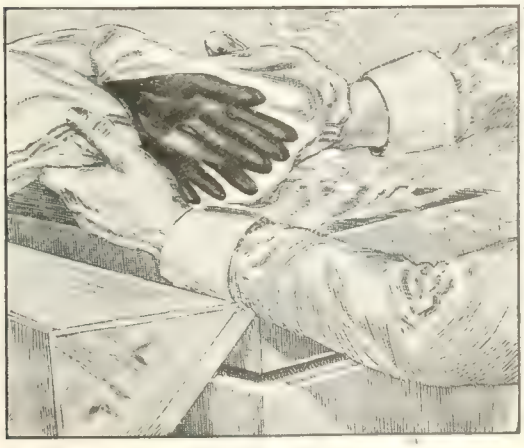

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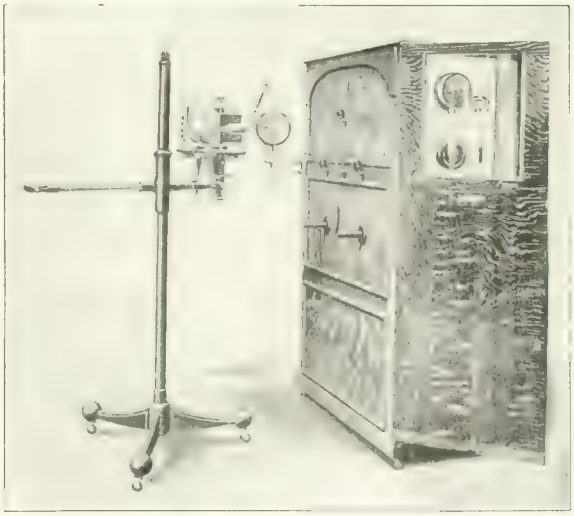

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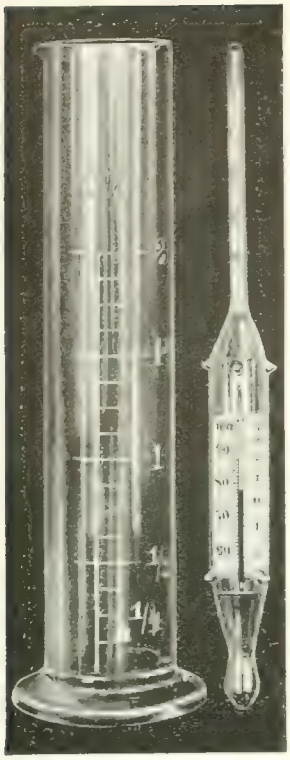

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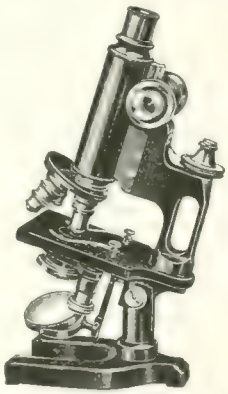

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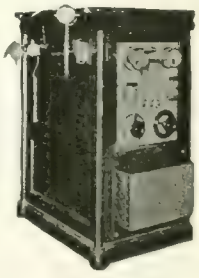

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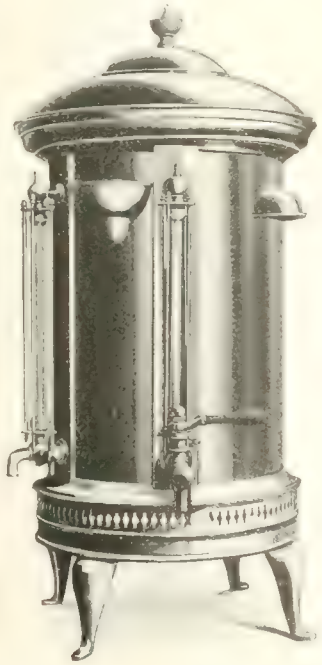

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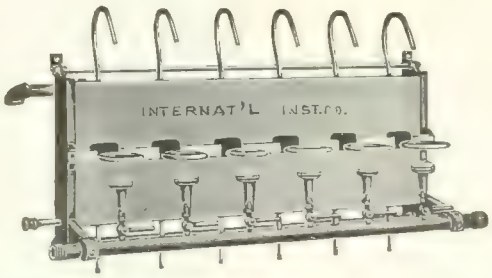

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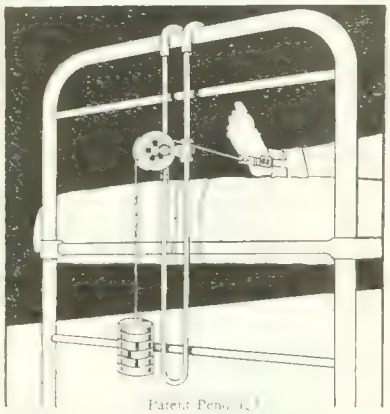

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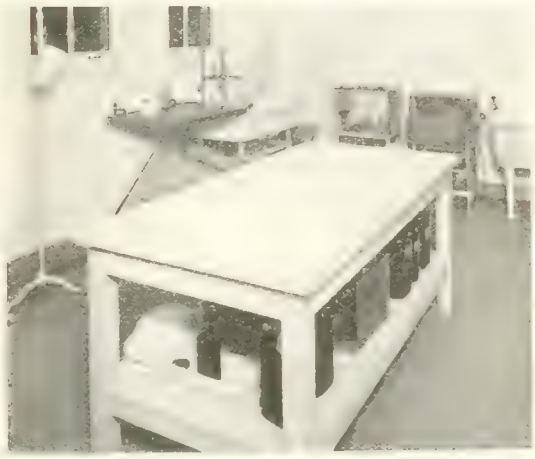

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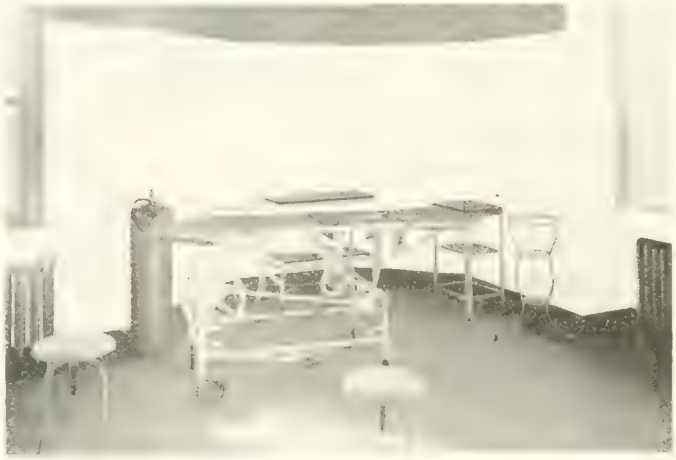

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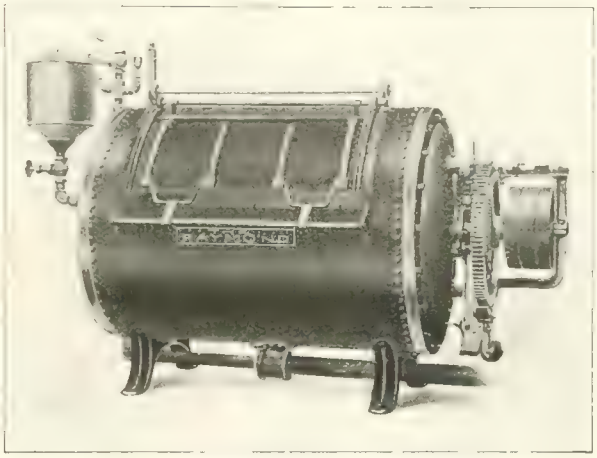

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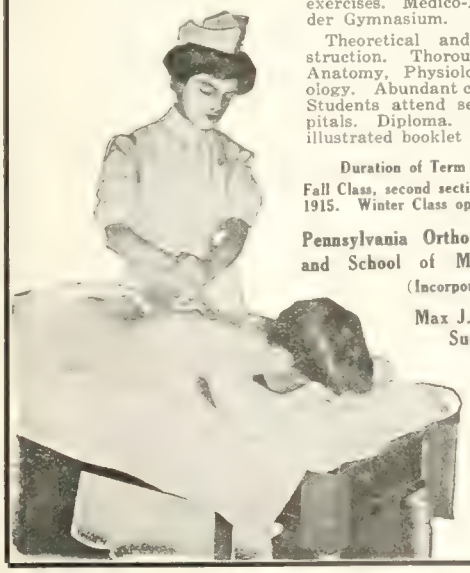

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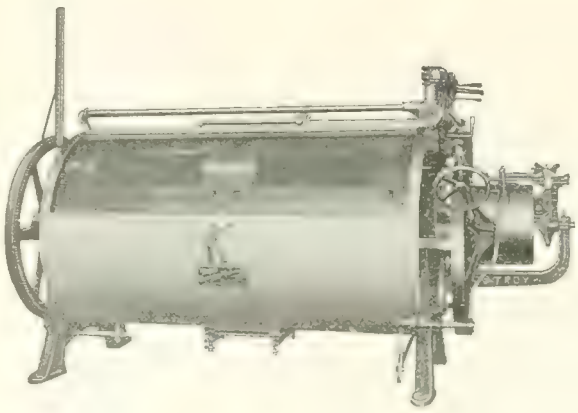

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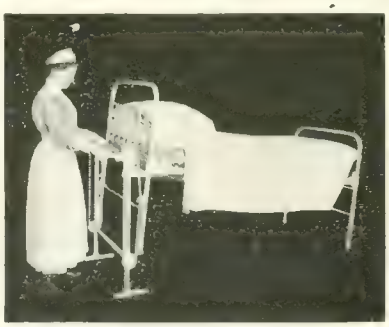

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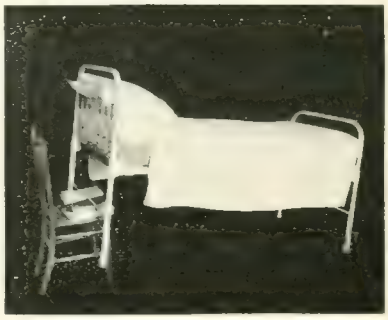

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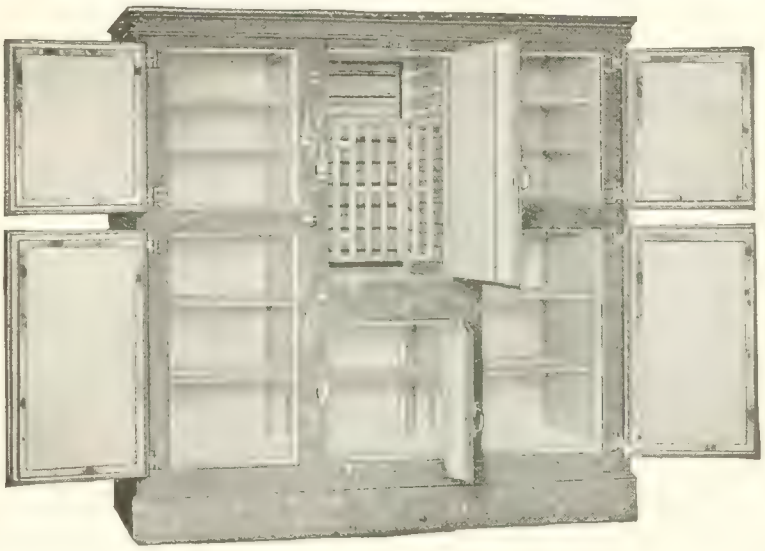

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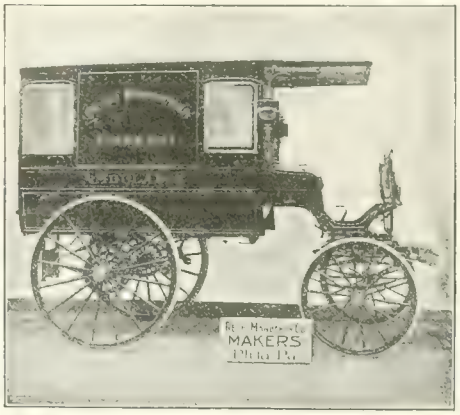

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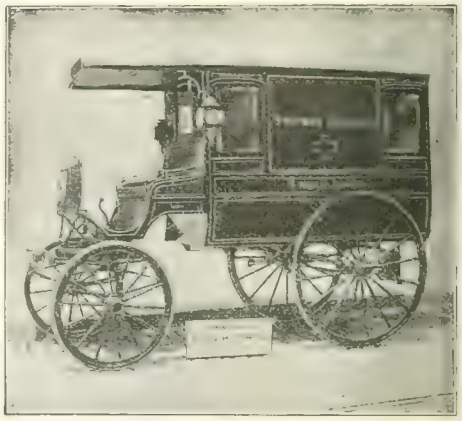

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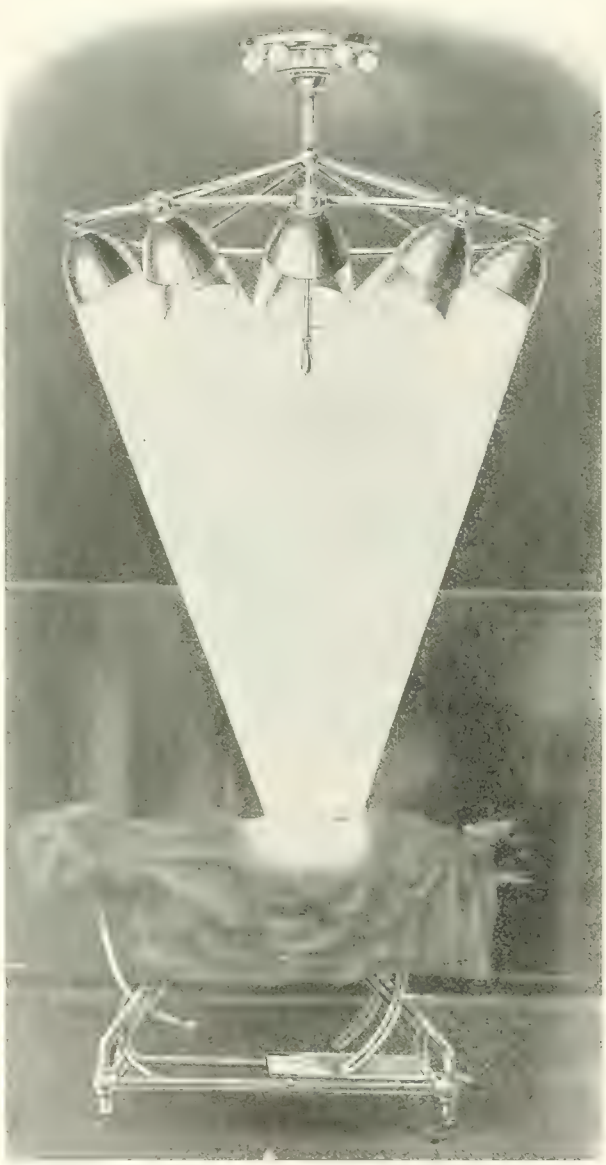

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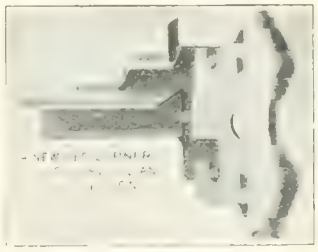

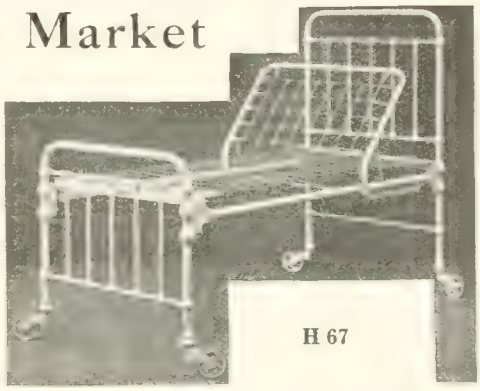

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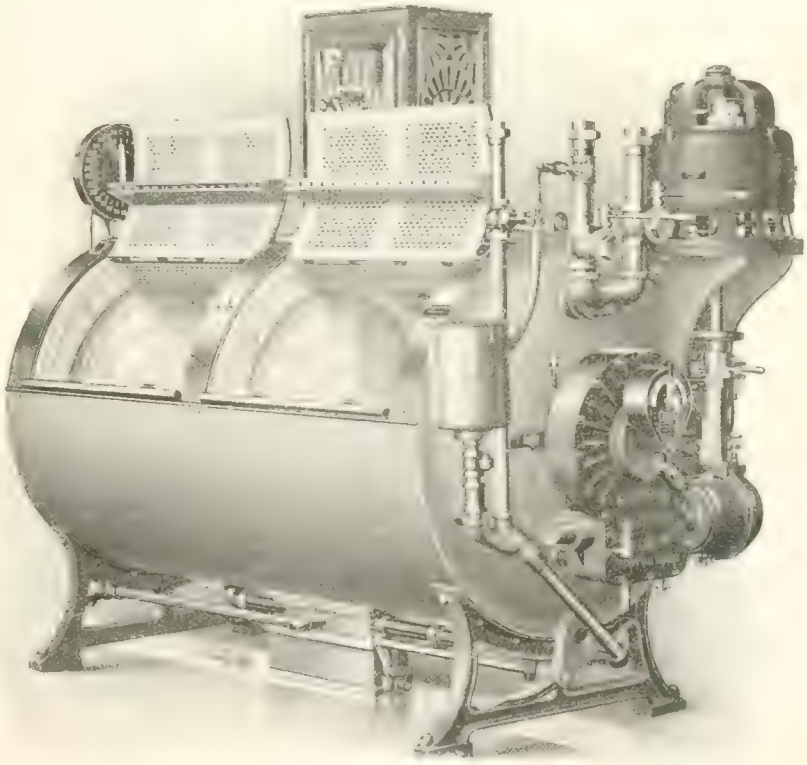

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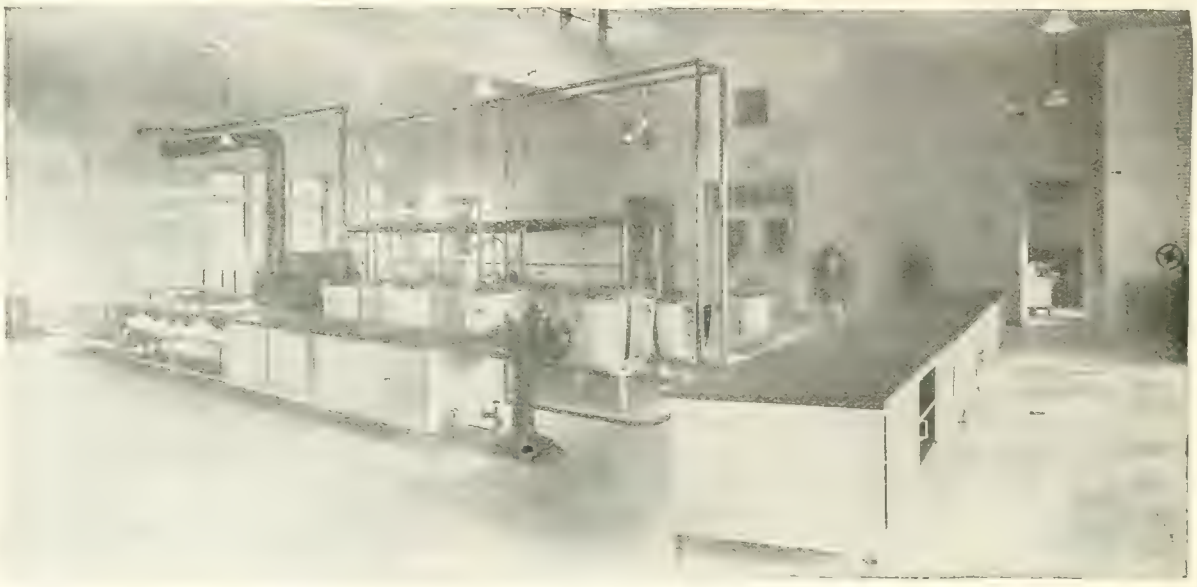

MAIN KITCHEN OF THE NEW GENERAL CITY HOSPITAL OF CINCINNATI, OHIO

THIS Hospital is one of the most complete in the country. We furnished, besides this main kitchen, the complete kitchen of the nurses' home, the diet kitchens, bake shop, and thirty of the various ward kitchens. We manufacture ranges, broilers, jacket kettles, coffee and tea urns—everything in the latest up-to-date appliances for a modern hospital.

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17 Inches of INNER BRACED Chair Hitched to ½ Ton

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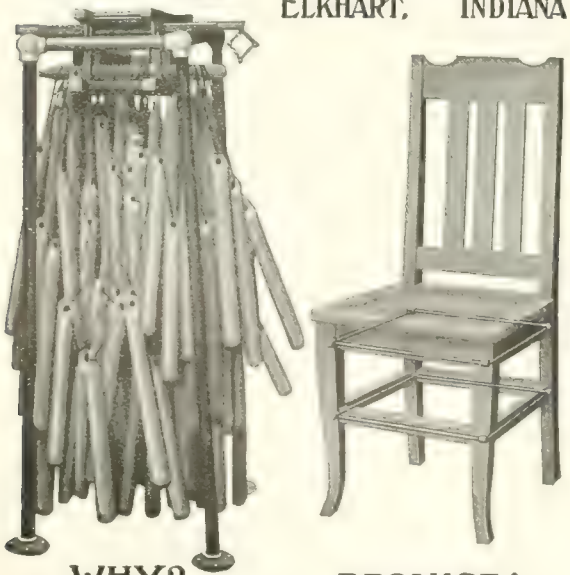

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We request communication with any of the above Hospitals as to the merit of our material

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MADE of special prepared clay and glazed. It will not leak, burst or corrode. When filled with 3 quarts of boiling water it will hold the heat for twenty hours and distribute the heat evenly in the bed. Just right for outdoor sleeping, sick room, automobile and baby carriage

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A FEW OF OUR USERS: School Board, New Orleans; Standard Oil Co., R. G. Dun & Co., Interstate Commerce Commission, Dept. of Labor, Washington, etc. *Wanted—Responsible agents for few remaining large cities—exclusive rights*

WE ALSO MAKE THE UNIVERSAL, THE ONLY VENTILATOR WHICH FITS FLUSH IN THE SASH RAIL

Universal Ventilating Co., 401 E. 14th St., Kansas City, Mo.
Gentlemen: Please send further particulars.
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Reduce Your Milk Bill

and at the same time better serve your patients.

It can be done—is now being done by a rapidly increasing number of hospitals. Milk is an invaluable food, and you must always have a plentiful supply for the patients and employees of your hospital—but are you satisfied with the present quality and its cost?

EVERY DAY MILK

is better than the best dairy milk because it is absolutely pure, more easily digested, always available, and can be used as a substitute for either dairy milk or dairy cream.

EVERY DAY MILK is simply cow's milk of superior quality evaporated by our special process so that a part of the water is removed, then sterilized and placed in sanitary containers. Add to it an equal quantity of pure water, and you have MILK—the same as the best dairy milk, minus only the bacteria. In the interest of efficiency and economy, write us for full particulars.

Even if you are one of the few hospital superintendents now satisfied with your milk supply, it would be advisable to have one or more cases of EVERY DAY MILK on hand for use in an emergency.

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THE manufacture of malt preparations for medicinal use is a highly specialized professional work, and is successfully accomplished only under the direction of competent chemists. While in some respects similar to the brewing of beer, there are vital differences both in the materials which enter into these products and the processes of manufacture.

ANHEUSER-BUSCH'S
Malt-Nutrine
TRADE MARK.
the food-tonic

is the recognized standard of medicinal malt preparations of its class. The materials used in its manufacture are specially selected and safeguarded. Only the choicest Barley-malt and Saazer hops are used, and the finished product contains all of the soluble substances of these two materials.

Malt Nutrine is a perfect malt preparation, and should not be confused with cheap dark beers, many of which are represented to be medicinal malt products.

For the hospital patient, physician, or nurse who is in need of a refreshing, appetizing, nourishing and mildly stimulating liquid food, ***Malt Nutrine*** is most serviceable. It is low in alcohol strength (less than 2%), but high in food value (14% of the solids extracted from malt and hops).

Pronounced by the U. S. Internal Revenue Department a PURE MALT PRODUCT, and not an Alcoholic Beverage

Sold by all druggists

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Visitors to St. Louis are cordially invited to inspect our plant

HOW much do you spend for absorbent cotton per year? It is probably a fair-sized item in your hospital. Write us your address on a postal and we will show you a saving.

The Maplewood Mills are the biggest in the country. We have built up a large hospital trade by reason of the fact that we meet the exacting requirements of surgeons and yet manufacture on so large a scale we can sell our cotton at a very low price.

MAPLEWOOD MILLS
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Do You Require Your Nurses to Break Ice By Hand in the Ward?

No. 59. Creasey Ice Breaker

Breaking ice by hand doesn't pay. There is a cheaper and easier way to do it that will give more uniform ice with less waste, viz., the Creasey Ice Breaker. No commercial institution having to feed and care for as many people as does the average hospital would be without a Creasey, purely as a business proposition. If your board finds it hard to make ends meet, there is so much the more reason why you should use the Creasey.

Let us send you for thirty (30) days' free trial a hand-driven machine like cut that will take a cake of ice 7x9¼ in. We ask only that you guarantee freight both ways if the machine is returned. Ready for shipping, it weighs one hundred pounds. There are fourteen different sizes of Creaseys.

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Next Time Order Curity

You need have no more trouble with your gauze and cotton. Other hospitals have solved this problem by using Curity products. The uniformly pure white bleach and thorough absorbency of every grade insure absolute satisfaction to you.

Send for samples to-day

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Aseptic Steel Hospital Equipment

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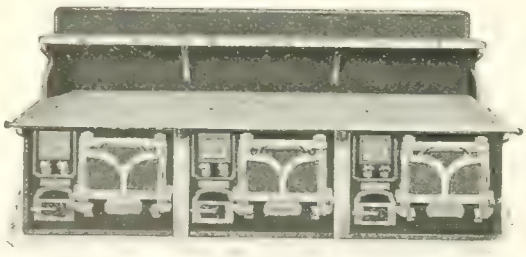
INFANT'S BATH

Heavy tubular frame, mounted on 5-inch rubber wheels, with steel porcelain seamless tub 41 inches long by 21½ inches wide; 10 inches deep.

Finished in white enamel.

EVERYTHING FOR THE KITCHEN

KITCHEN OUTFITS BURTON STEEL RANGES



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Scrap Tables. Kitchen Tables
Ward Tables of a New Sanitary Pattern

Authoritative expert advice with complete kitchen equipment plans free of charge

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A Perfect Floor for Public Institutions

MULLER ASBESTONE

The Floor That's Laid With a Guarantee

Dr. L. W. Walker, Superintendent, writes:

"It is a great comfort to feel that in such a sanitary base as you provide no water cracks exist. Your material is especially adaptable to unusual places such as stairways, sink tops, work table tops, etc. A great feature of Asbestone as floor material in rooms where a good deal of work is done, such as kitchens, dining rooms, etc., is that it is easy on the feet. It has all the good qualities of vitrified tile without having the hard tread common to that material."

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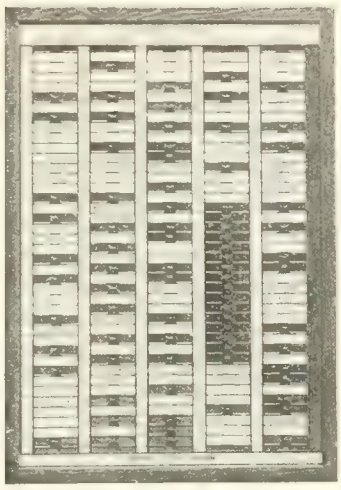
UNIVERSAL HOSPITAL PATIENTS' REGISTER

Style D-2



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We specialize on HOSPITAL REGISTERS of all kinds; making them to order and to fit any requirements, also of any size and for any size card desired.

Send for our catalog, which fully illustrates and describes our entire line.

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Foster "IDEAL"
Hospital Beds and Cribs

Used in Many Institutions

Are made strong and heavy. Three-piece construction; head, foot and springs. Springs are made with woven wire, National or Link fabric, and with angle sides or tubular sides. Malleable corner connections assure strength, rigidity and convenience in setting up.

We show many patterns in our catalogue and make special beds to any specifications. Write for a copy of our special institution bed catalogue.

No. 309

Tubing, 1 5/16 inches; cross rods, ⅞ inch. Regular height of head, 36 inches; foot, 32 inches; spring, 17 inches from floor. The spring can be placed higher from floor, on special orders, by making the head and foot higher, at a small extra charge. Regularly furnished with "Q" National spring, as shown.

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The importance of correct lighting for hospitals

"I believe that the elements of installing a light that is wholesome, that is physiologically correct, that will give the eye what it needs in order to see what it should see, must hereafter be considered the scientific lighting of our modern hospitals. The modern idea is to equip the hospital with everything which will make it a greater comfort to the sick and a greater aid to the convalescent. Proper illumination is tremendously important."—*A. J. Ochsner, M.D.*

The Eye Comfort System

(with X-Ray Reflectors)

is recognized as the correct solution of the hospital lighting problem.

No glare—the soft, comforting effect of daylight.

We design and manufacture fixtures to suit architectural demands.

Our Architects' Portfolio standardizes lighting specifications. Free to architects and engineers. To others $5 a copy.

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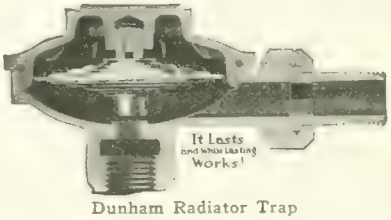
Write for our free booklet on hospital lighting.

DUNHAM SYSTEM
OF
VACUUM STEAM HEATING



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Especially adapted for hospital heating on account of the fact that it produces absolutely noiseless circulation of steam throughout every radiator in the building.

The Dunham Radiator Trap, which is connected to the return end of every radiator in the building, allows the free passage of all water and air from the radiators without loss of steam. This means that the highest possible radiator efficiency can be produced with the Dunham System. Tens of thousands of these traps in use on Dunham Systems in the United States and Canada.

Write us for further information in regard to hospital heating.

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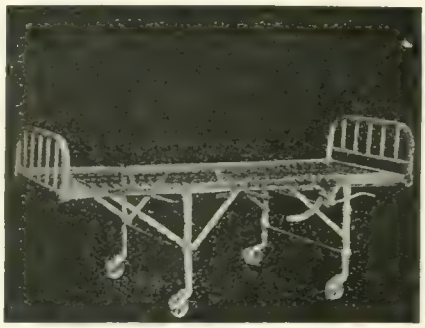
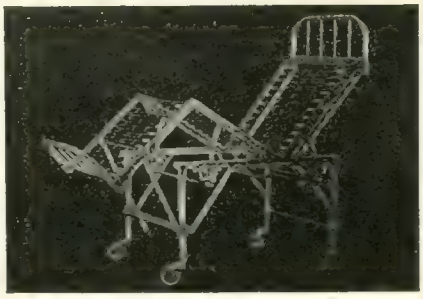
The Way Chair Bed


Used as regular bed

Can be adjusted to any desired position.

Can be used as a wheelchair.


The Fowler position

Price, complete with strictly high-grade cotton-felt mattress $30.00

With hair mattress $35.00

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MINNEAPOLIS BEDDING CO., Manufacturers
MINNEAPOLIS, MINN.

THE C. SCHMIDT COMPANY
Designed, Manufactured and Installed
THE REFRIGERATOR EQUIPMENT
for the new
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One of the 32 Ward Kitchen Refrigerators is shown in cut

Many costly mistakes are made by the installation of improperly designed refrigeration which could easily have been avoided by expert advice.

The C. Schmidt Company is prepared to furnish

EXPERT AUTHORITATIVE ADVICE

to Boards of Trustees or Hospital Superintendents guaranteeing them the maximum refrigeration results at minimum cost and will furnish them

PLANS AND SPECIFICATIONS

and consultation with their experts free of charge.

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Best Bros.
Keene's Cement
The Plaster That Stands
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ONE of the many well-appointed Hospitals of the country plastered with this most durable and sanitary plaster.

The Best Bros. Keene's Cement Co.
ESTABLISHED 1887
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Furniture For Hospital Laboratories

Cheap Laboratory Furniture Is Never Economy

The peculiar conditions prevailing in the laboratory make it imperative that the equipment be in the fullest sense adequate as well as constructed for permanent satisfaction.

Kewaunee Laboratory Furniture

Costs a little more than the ordinary, but you can appreciate the distinction—and realize its importance—if you take the trouble to carefully investigate.

Perhaps some of our standard equipment will meet your needs—if not, we are prepared to economically manufacture equipment to order.

Kewaunee Mfg. Co.
LABORATORY FURNITURE EXPERTS
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"Knuklfit" Surgeons' Gloves

The Acme in Surgeons' Gloves

MADE OF SELECTED FINE PARA RUBBER

IT IS OBVIOUS

THAT—"The knuckles are the largest part of the fingers.'

THAT—"Unless there is a bulge in the glove fingers at these points, free action of the fingers will be impaired."

THAT—"The plain fingered glove will bind across the knuckles and cause tension on the finger tips."

THAT—"Tension on the finger tips impairs that sensitive cuticle touch needed by surgeons while performing operations."

WHY have many surgeons bought oversized gloves? Because they have been unable in the past to buy a perfect-fitting glove and yet enjoy comfort, free action of the fingers, and sensitive cuticle touch.

OUR GUARANTEE

We guarantee our medium-weight gloves not to vary over 3/100 of an ounce per glove, bear more sterilizations, and give greater comfort to the wearer and a more sensitive cuticle touch. If they fail in any one of these features, return the gloves and we will refund you your money.

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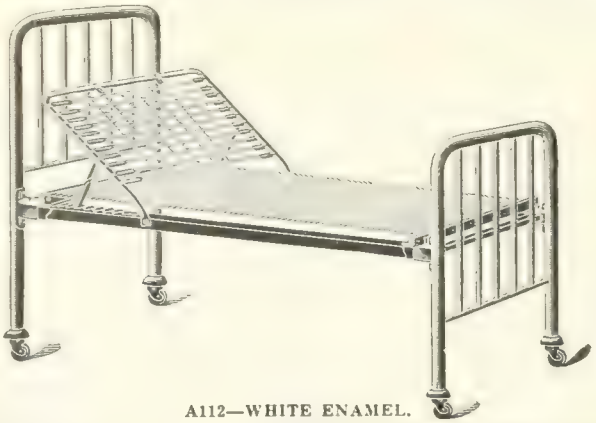
We Specialize on Institution Beds

We center every effort of our organization on the production of Metal Beds, Springs, and Hospital Furniture for general institutions. Will be pleased to quote prices on application.



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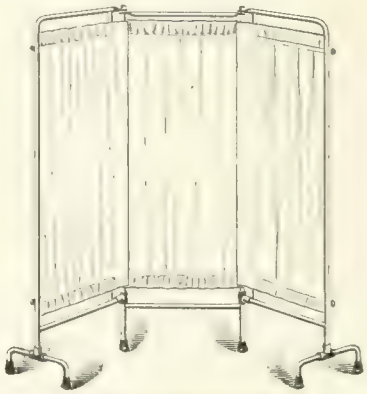
Pillars, 1 5/16 in.
Filling, 7/8 and 1 1/16 in.
Head, 48 in.
Foot, 36 in.
Sizes: 3 ft., 3 ft. 6 in., 4 ft., and 4 ft. 6 in.
Fabric, Heavy double weave.
Ribs, 1¼ in. apart.

Weight (6 ft. 3 in. long by 3 ft. wide), 116 lbs.
Height from floor to top of spring, 23½ in.

THREE-PIECE BED ON STEEL ANGLE FRAME—STANDARD RAIL CONNECTION.
Made with Adjustable Back Rest, unless otherwise ordered.



A126—BED SCREEN.

Small Size:	Large Size:
Height, 5 ft.	Height, 5 ft. 6 in.
Width, open, 5 ft.	Width, open, 7 ft. 6 in.
Width of wing, 1 ft. 8 in.	Width of wing, 2 ft. 6 in.

Frame made of 5/8-in. tubing.
Curtain rods, ¼ in.
White enamel.
Rubber tips.
Shipping weight, 25 lbs.
In ordering give size desired.

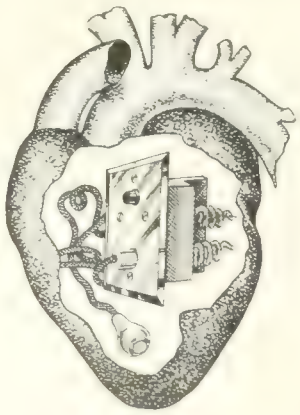
SMITH & DAVIS MANUFACTURING COMPANY

Manufacturers of High Grade Institution Beds and Hospital Furniture

1925 Locust Street ST. LOUIS, MO.

The Heart

of the Hospital



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The Chicago Signal Co.

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"A PERFECT REST"

The "MERCY-REST" gives the patient the position "that just fits."

The ***patient*** in bed or the ***nurse*** can work it—***"EASY."*** There are no "gears," "ratchets," or "dogs" in it to grind or trip.

The "MERCY-REST" is easily attached to brass or iron beds, is never in the way, and is always ready for use.

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ALANSON C. NOBLE, President

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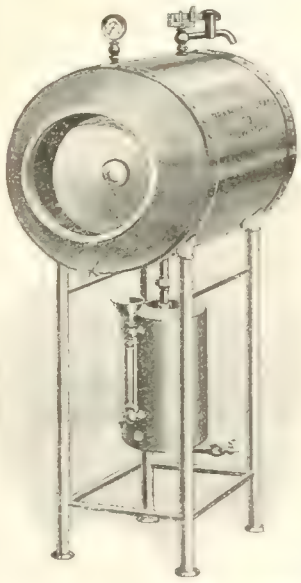
"Eclipse" Patented Autoclave

Similar in construction to our well-known "Eclipse" Surgical Dressing Sterilizer, except in its capacity and jacketing.



The steam fills the outer jacket and enters the inner chamber at once. This operation prevents the contents from becoming moist by the condensed steam.

Can be used as a free steam, nonpressure sterilizer by opening the air cock if desired. Mounted on white enameled stand. Heated by steam, gas, gasoline, petroleum, or electricity.

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Successors to the Bramhall Range Co.
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Having Malleable Iron Locks
Guaranteed Unbreakable

Quality First Consideration

Well constructed and finely finished. Made with either Woven Wire or Link Bottom as preferred. High grade casters

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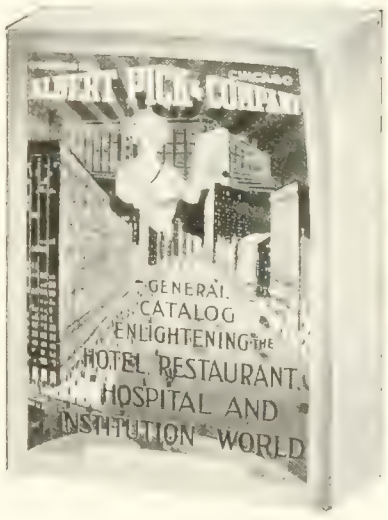
The Modern Hospital Publishing Co.

Let Us Send You Our Big New Institution Catalog U60



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Manufacturers of Kitchen Equipment, including Ranges, Steam Tables, Coffee Urns, etc. *Distributors* of *everything* in furnishings required by Institutions and Hospitals.

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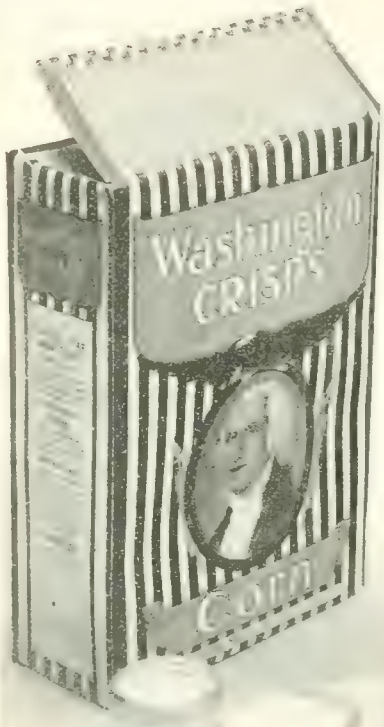
The Kind with the Big Flakes



THE ideal light lunch for the convalescent—full of "smack," yet not surfeiting; non-heating, easily digested, delicious. Give patients

Washington Corn Crisps

and they will "pick up" in appetite.

United Cereal Mills, Ltd.
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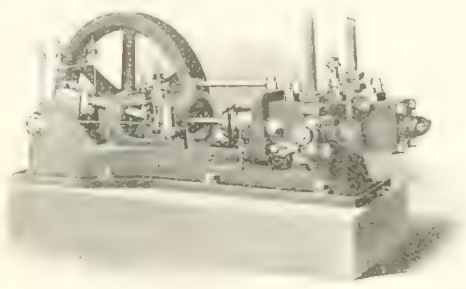
QUINCY, ILLINOIS BUFFALO, NEW YORK

Hospital Refrigeration

HOSPITAL superintendents and architects do not have to be told the value of a refrigerating system. The use of ice for refrigeration in an institution presents many inconveniences and is by no means strictly sanitary. **Mechanical refrigeration** is most essential when the manifold uses and scattered refrigerator service of the hospital are considered.

With ice there can be no regulation of temperature. For certain serums a definite temperature, within a few degrees, may be needed; for certain specimens, a temperature just above freezing must be maintained, which must not be allowed to vary. Meat, vegetables and dairy products must be kept in a perfectly fresh state. Ice cream must be made in the latest approved sanitary way. Only with mechanical refrigeration is this possible.

We make a specialty of hospital refrigeration and can refer you to many noted hospitals that are now using KROESCHELL PLANTS and find them an economy.



THE KROESCHELL CARBONIC ANHYDRIDE SYSTEM of refrigeration is especially adapted to the hospital for the following principal reasons:

1. Safety first. This Carbonic Anhydride System cannot explode.
2. CO_2 is harmless and odorless.
3. This system is the most economical one.
4. Highest efficiency with low cost of maintenance.
5. It is simple to operate.

An ice plant in connection with the KROESCHELL SYSTEM will, in addition to cooling all refrigerators, supply the whole hospital with ice at low cost.

Drinking water cooled by the KROESCHELL SYSTEM circulates constantly and is kept at uniform temperature everywhere.

This system is also of great value in connection with the ventilating system and air conditioning for operating rooms, wards, etc.

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Main Office and Works, 450 West Erie Street, Chicago, Ill.

New York Office, 30 Church Street

300,000

feet of Hospital floors installed during the past year and every foot is

SANITARY
FIREPROOF
QUIET
RESILIENT
ATTRACTIVE
GUARANTEED

Manufactured and installed by the

ATLAS FLOOR COMPANY

37 West VanBuren Street
CHICAGO

"KELENE"

PURE CHLORIDE OF ETHYL

A LOCAL ANESTHETIC

ENTIRELY HARMLESS, EASILY APPLIED

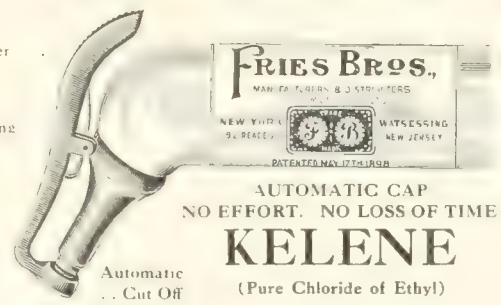
Complete Anesthesia in thirty seconds

Use "KELENE"

IN GENERAL ANESTHESIA

AN ADJUVANT TO ETHER

Free from all dangerous after effects



AUTOMATIC CAP
NO EFFORT. NO LOSS OF TIME

KELENE

(Pure Chloride of Ethyl)

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NEW IDEAS ALWAYS SURPRISE US

The hospital or institution which has never given

"Wyandotte" YellowHoop

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Wyandotte Sanitary Cleaner and Cleanser

a thorough trial, thinks them no different and no better than a number of other materials which might be used.

Equally true, those who are using these Wyandotte products know of their superior properties, and know that with them they can do what they cannot do with other articles. At first these users, too, were somewhat skeptical as to the claims made for these washing agents, but when they saw what they did once, twice—yes, every time—doubts gave way to happy surprise.

Those who know these products best are their most enthusiastic friends and continuous users. **If you would know why,** merely order a barrel of each from your supply house and give them a trial. If not all we say, they will cost you nothing. Or write us should you first desire further information.

THE J. B. FORD COMPANY, ***Sole Manufacturers,*** **Wyandotte, Mich.**

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The Universal Flooring

The most sanitary and durable plastic flooring made. Lay it over your old floor or lay it as a new flooring.

Noiseless to walk on, and absolutely fireproof.

TILEINE is laid solely by expert workmen in the exclusive employ of this company.

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A Sanitary Aid for Modern Hospitals

Many modern hospitals have adopted the use of BAYONNE Roof and Deck Cloth for porch roofs and decks, sun parlors, sleeping porches and interior floor covering because of its wearing quality and cleanliness.

BAYONNE can be laid on the dry boards and washed with water because it is positively waterproof. It is noiseless, will not crack, peel, expand or contract and is soft to the feet without being slippery when wet.

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Also headquarters for Bleached Gauze, Bandage Muslin, Crash Toweling, etc.

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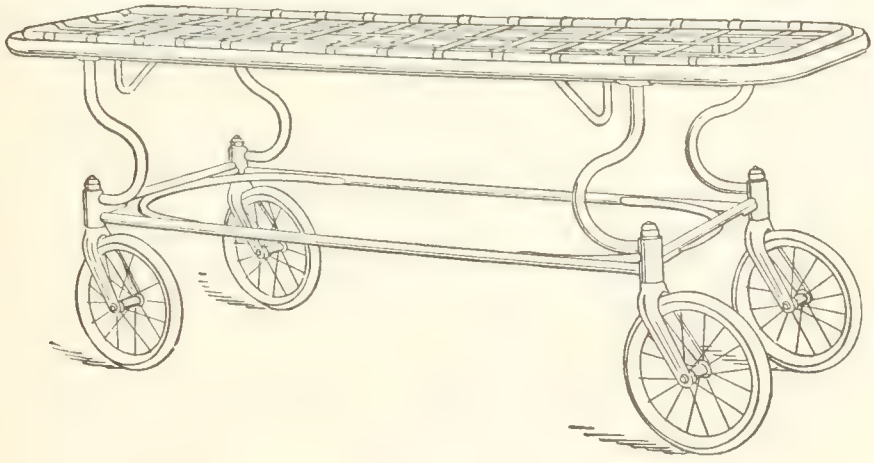

Heavy wrought steel construction. Baked white enamel finish. Detachable steel stretcher top. 1¼-inch endless rubber cushion tire (U. S. patent September 20th, 1910) encircling the entire top, to prevent marring of walls, etc. Mounted on four swivel wheels, all having 12-inch x 1¼-inch endless rubber cushion tires. Size, 20 inches x 72 inches. Height, 31 inches.

These Stretchers have endless rubber cushion tire encircling the entire top to prevent the marring of walls, corridor corners, and door frames.

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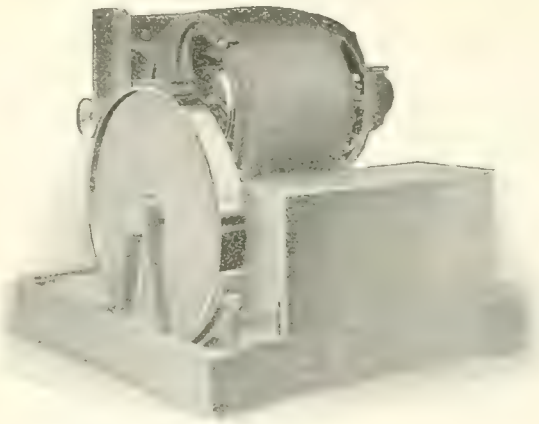

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Also Hand Dumbwaiters and Hospital Lifts

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"HYGENIA" Floors and sanitary cove base render your hospital sanitary, fire, water, dust, germ and vermin-proof.

"HYGENIA" floors are as easy of tread as linoleum and will last a lifetime. Let us SHOW YOU.

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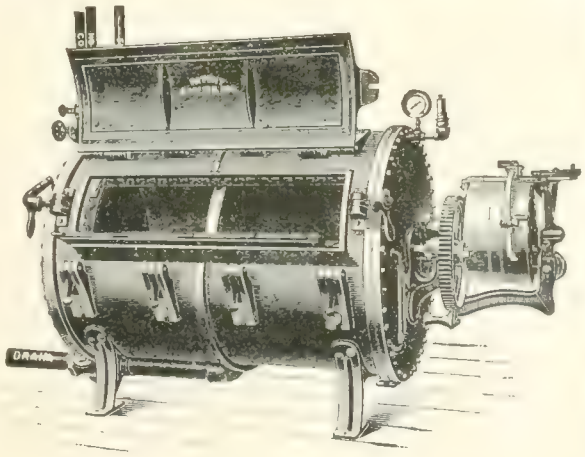

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Laundry Machinery and Appliances
For the Modern Hospital
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will give you *dry walls* that will last. Steam, heat and moisture do not affect it—which stamps it O. K. for hospitals. It doesn't peel or flake. It is fire-resisting. More economical and far better than cold-water paints or the lead-and-oil kind.

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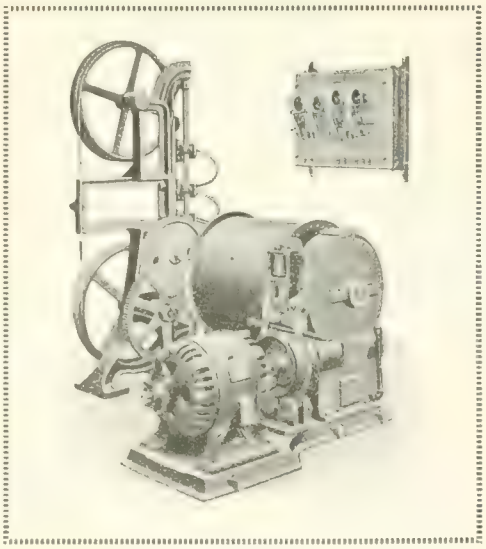

Safety in Elevator Service

PUSH BUTTON CONTROL elevators must be made so that it is impossible for accidents to happen. We have equipped hospitals with elevators (hydraulic, steam and electric) for forty years, one of our latest installations being that in the new Mayo Clinic at Rochester, Minnesota. The following features of

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make them particularly suitable in hospitals:

A FLOOR STOP DEVICE which indicates the direction of travel of the elevator, and functions to bring the car to a stop exactly opposite the landing, so as to eliminate the likelihood of stumbling.

AN EMERGENCY STOP DEVICE by which the car may be brought to a stop at any minute by pressing a button.

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A MECHANICAL LOCK which prevents opening of door unless cage is at landing.

HATCH LIMIT SWITCHES and a SLACK CABLE SWITCH which opens the control circuit if the car should over-travel or meet with any obstruction in descending.

Cutler-Hammer controller is used, especially designed for this type of elevator. The main line switch is equipped with a blowout magnet to prevent arcing. An electrical interlock is used to prevent closure of the main line switch except when all the starting resistance is in the armature circuit.

We will be pleased to explain the more intricate details of Kieckhefer Elevators on request.

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THE CHASE HOSPITAL DOLL

is over five feet tall, made of finely woven stockinet. Is durable, waterproof and sanitary. It has copper reservoir which has three tubes leading into it, corresponding in location and size to the urethral, vaginal, and rectal passages.

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Superintendents now using the adult size, as illustrated above, will be glad to know that several small models are now perfected, corresponding to a two-month, four-month, one-year and four-year-old baby.

TRAIN YOUR NURSES

Nurses *must* be trained. The nurse who has had PRACTICE added to THEORY feels a confidence in her first year's training.

THE CHASE HOSPITAL DOLL

is to the hospital training school for nurses what the laboratory is to the medical student. The theory of teaching by its use is converted into the practical knowledge and manual dexterity obtainable only by actual work.

The value of this model is found in the many practical lessons which can be taught in the class room, such as handling patients, administering enema, douching, probing in the ear and nose cavities—in short, the complete care of the patient. *Send for particulars.*

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Elbow Type — For Clinic Lavatory

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Patented

The Perfect Mixing
AND
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For Shower, Lavatory
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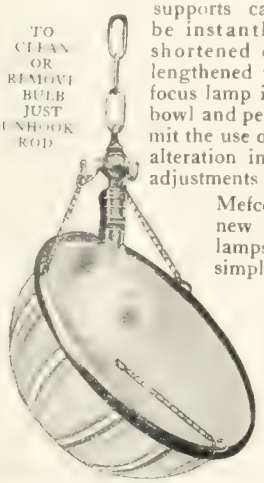
Sanitary and Efficient

MEFCOLITES make excellent units for hospital lighting. They are neat in appearance and very easily cleaned. The glass bowl is held securely by a continuous band which is locked in position by one of the supporting arms. These supports can be instantly shortened or lengthened to focus lamp in bowl and permit the use of any type or size lamp without alteration in fixture. There are no screw adjustments in Mefcolite fixtures.



Mefcolites are suitable for use with the new nitrogen or standard tungsten lamps. They are the last word in simplicity. They are neat in appearance, reasonable in cost and thoroughly well made.

Write today for prices and particulars regarding various styles and uses

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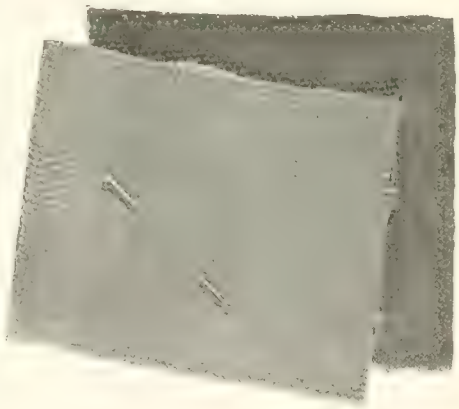

Send for samples of sanitary shades

SHADES that can be laundered and attached again; that are made of the strongest and most flexible cotton duck. These shades are not dust catchers, and their mechanical operation is smooth and true. They are adjustable if desired, to give either top or bottom light and ventilation.

Shades can add much to the comfort of patients and workers. Let us send you our booklet, too.

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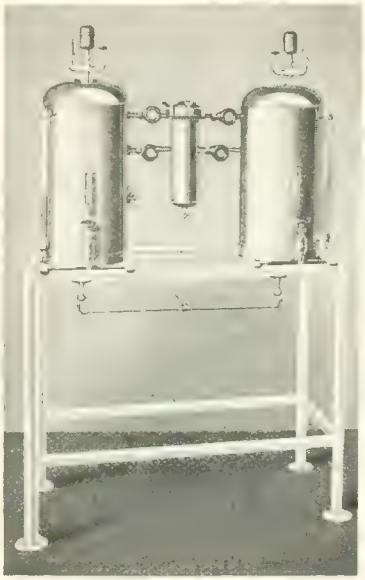
100% Efficiency—Unsurpassed Quality



Price $175.00

SEAMLESS HIGH PRESSURE WATER STERILIZERS

MADE of seamless drawn shells. Constructed entirely of brass. Tested on a Compound Hydraulic Pump. Heated by Steam, Gas or Electricity.

UNIQUE FEATURES

Maximum Filter Screw. We believe this is the only Sterilizer on the market on which the Filter can be cleaned and replaced inside of three minutes.

Maximum valves on water glasses are so constructed that should the glass become broken hot water and steam would not escape into the operating or sterilizing room. The pressure inside of the tank would automatically close the opening. No other Sterilizer is equipped with these Maximum valves.

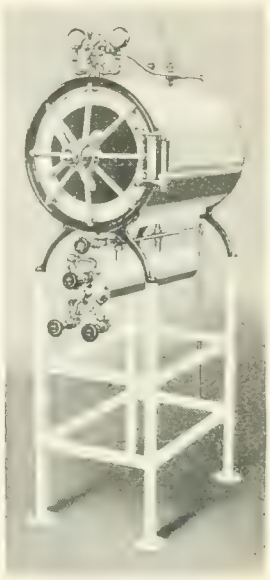
Made in all standard sizes. Heated by Gas, Steam or Electricity.

HIGH PRESSURE DRESSING STERILIZERS

MAXIMUM Vacuum Attachment, Maximum Friction Door, Continuous Motion Valve, together with a Sterilizing Chamber completely surrounded by steam—with the exception of the door—makes our High Pressure Sterilizer, we believe, the easiest to operate and the most satisfactory on the market.

The Sterilizer itself is made of seamless drawn shells. Heated by an Auxiliary Heater, allowing the steam to circulate all around the Sterilizing Chamber.

Let us have your specifications for Sterilizers. We have interesting information to give you.



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Best for Hospitals and all buildings requiring floors that are

Sanitary
Fire-proof
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We offer a wide selection of time-tested colors that do not fade.

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are staunch, rigid, and easy-running—a comfort to the occupant.

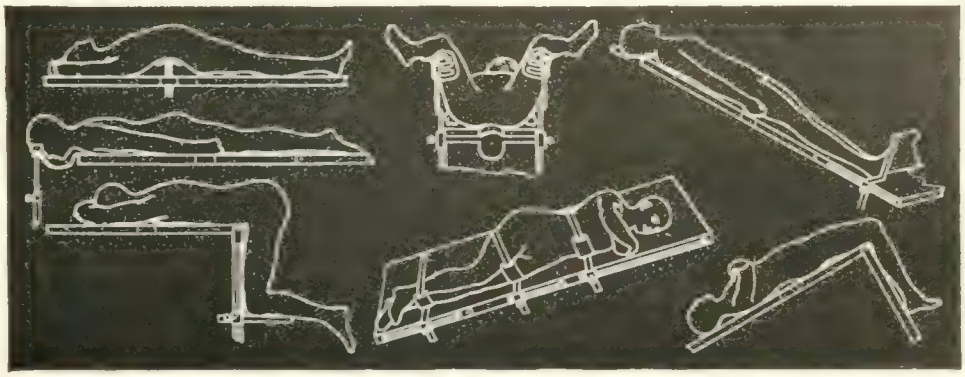
We carry a wide range of styles in stock, and can fill orders usually the day we get them. Send for catalogue showing complete line.

TOLEDO METAL WHEEL CO.
Toledo Ohio

Every known position can be obtained

with the

Cincinnati Pedestal Automatic Operating Table (WC-3)

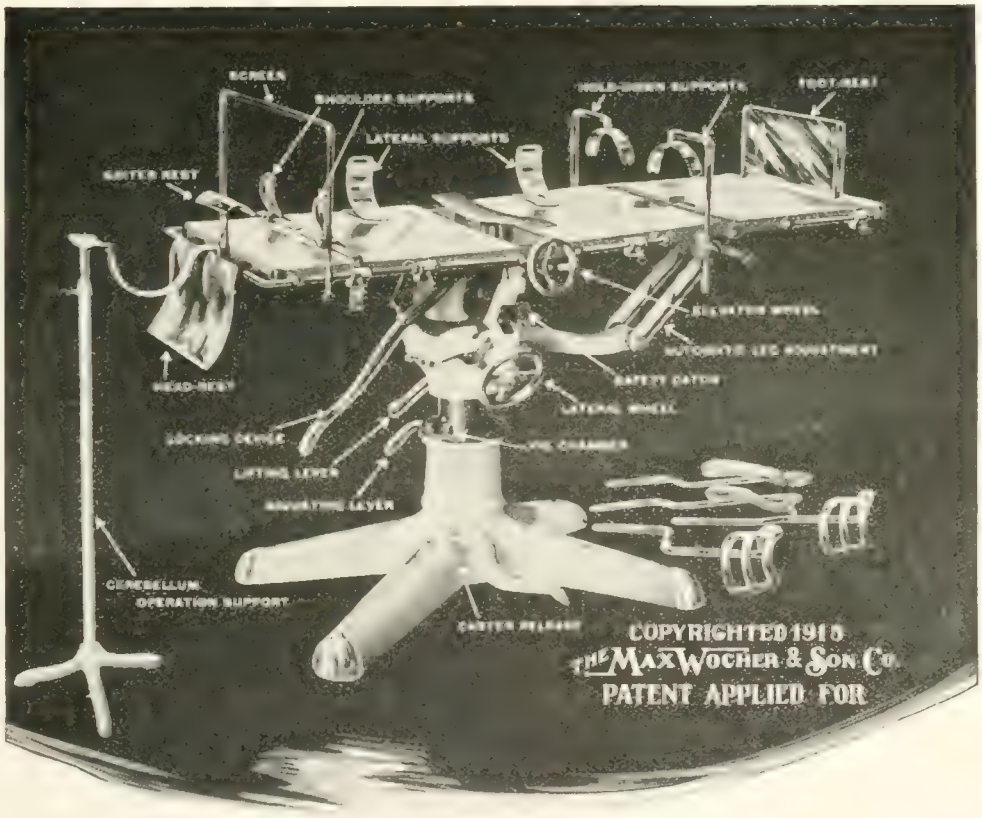


THIS table can be turned on its axis to obtain the proper light from any direction or to exhibit the field of operation to spectators.

It is the simplest table to operate, as it is suspended on a fulcrum point and the main position is controlled by a hand lever and not by slow operating gear wheels.

THE CINCINNATI PEDESTAL AUTOMATIC OPERATING TABLE is designed after the latest Swiss model, with all the American positions and attachments added.

The lateral position, not obtainable on ordinary tables, can be obtained with this table by the lateral wheel. This position is perfect for kidney or rib operations, and permits free drainage in ovariotomy, gallstone, appendicitis, peritonitis and other abdominal operations.



For goiter, breast, head, or bronchoscopic work, a perfect reverse position is obtainable.

For prostatic, lithotomy, or perineal operation, the table has a cut-out section.

During the Trendelenburg posture a round, revolving, removable tube supports the knee and prevents numbing.

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Manufacturers of Sanitary Hospital and Office Furniture

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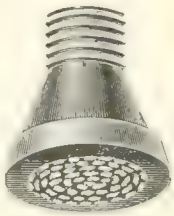
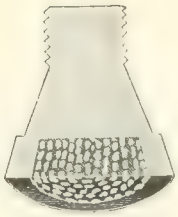

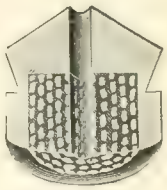

SAFETY

You can avoid the noise of sliding tables and chairs from one part of the room to another, and the clumping sound of crutches against hard floors. Such noises irritate the patient and retard recovery. They can easily be prevented by the use of

FOSTER
Safety and Silence Tips

Foster Safety and Silence Tips are made in many styles and for various purposes. They assure Safety and Silence in the hospital. The Foster Cane and Crutch Tip not only prevents the annoying sound of unshod crutches against hard floors, but eliminates the danger of the convalescent slipping and falling.

With Foster Furniture Tips there is no unpleasant noise of sliding tables and chairs. Walls and furniture are also protected from being marred.

All tips are made of special quality material, and *made to wear.*

Write today for complete price list

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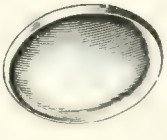
Originators and Patentees of the Foster Friction Plug, Which Prevents Slipping

SILENCE



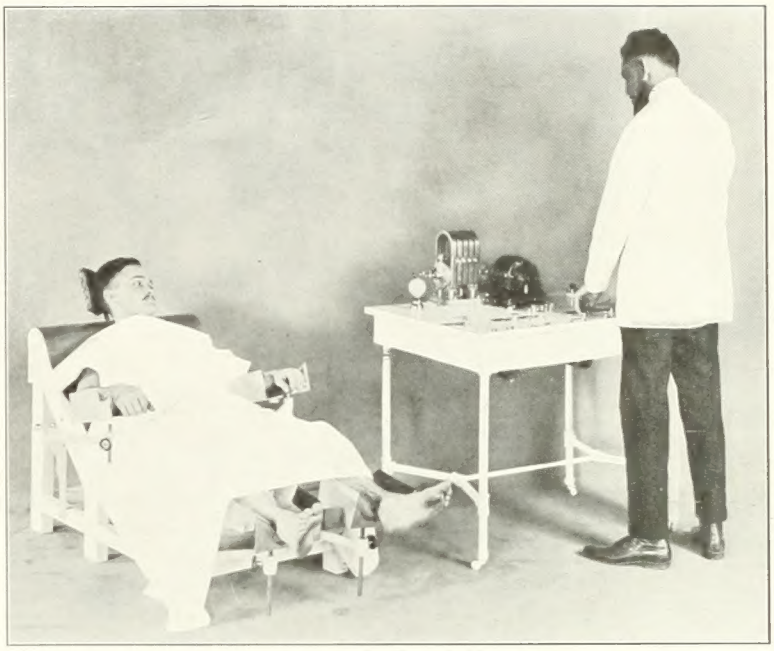
SAN E QUO

Automatic Exerciser

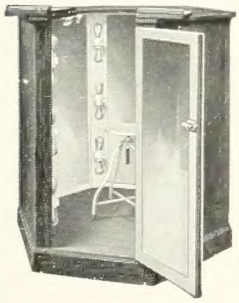
THE results attained by the Automatic Exerciser (Kellogg-Bergonie method of Ergotherapy) in the treatment of *obesity* and other disorders of metabolism commend it to the immediate attention of institutions and physicians generally. Under judicious management it will accomplish reduction of weight with any desired degree of rapidity—as attested by the experience of the Battle Creek Sanitarium and other institutions which we have equipped with this appliance. Even in cases where dietetic restrictions are not exercised gratifying results are obtained.

The apparatus itself is characterized by its exceedingly flexible control and the ease with which the operator may select any one of several effective methods of treatment. Because of the *sinusoidal* current very powerful muscular contractions may be evoked *without pain* to the patient. This muscular action is absolutely automatic and independent of the patient's volition. He experiences no fatigue while undergoing treatment from the Automatic Exerciser—even though an enormous amount of muscular effort may be going on.

This apparatus proves especially valuable in the dissipation of local fat accumulations, since the increase in metabolic activity can be excited at the very point where it is required. It provides also perfect regulation of dosage, thus enabling the operator to adjust the treatment to any condition or requirement—a very evident advantage.



Nor is this method confined alone to cases of *obesity*, both general and local. Its efficacy in cases of *chronic rheumatism, osteoarthritis, gout, sciatica, viceroptosis, enteroptosis, paralysis, scoliosis*, and wherever deficiency in muscular development is encountered, evidences its scope in the treatment of disease. And the least we can do is to tell you of the actual results obtained by this method in institutions of note. Will you accord us this privilege? All you need do is to check the coupon below.



"Sanequo" Electric Light Baths

APART from their clinical value, their attractiveness, their durability, and the efficient, consistent service they render—"Sanequo" Electric Light Baths possess all the advantages of originality and priority of production. Originally designed for use at the Battle Creek Sanitarium, our Electric Light Bath Cabinets now form part of the regular equipment of many institutions both here and abroad. Constant improvement in design and construction has enabled the "Sanequo" to retain its leadership in this field. As a result, our Cabinets are to be found in hundreds of hospitals, sanitariums and physicians' offices, where they are regarded as indispensable. Another essential feature is that they require the least expenditure of current to obtain the desired remedial effect. A copy of our catalog—showing four types of this Cabinet—is yours for the asking. Merely check the coupon below.

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NO library of information about hospital and sanitarium equipment is complete without our large and completely illustrated catalog. You will find it useful as a reference book whenever you are in the market for anything in our line. We solicit the opportunity to send you this catalog FREE and fully postpaid. Just your request on a post card will bring the book by return mail. If you are, right at this time, particularly interested in any of the various lines of equipment we make, we will appreciate your checking the coupon.

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210 Washington St., Battle Creek, Mich.

Please send me literature describing equipment I have checked in the spaces below:

- [ ] "Sanequo" Automatic Exerciser.
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Sanitarium Equipment Co.

210 Washington Street **Battle Creek, Michigan**

Write your name in the margin, tear off, and mail to us.

WESSON OIL *for* SALADS *and* COOKING

Big Saving in Cost

A BIG saving in cost with no reduction in food value, in digestive value, in palatability, this is the story of Wesson Oil. Wesson Oil is as pure, as nourishing, as digestible, as palatable as anything you have ever used in the kitchen and it costs about a cent an ounce.

Use it in place of butter and olive oil and the saving will run into dollars.

There will be no loss of quality. Wesson Oil is a delicate vegetable oil. Its food value is equal to that of good olive oil or good butter. Since Nature gives us maple sugar from the same tree that furnishes wood for our floors we should not be surprised to find a most delicious and wholesome edible oil made from a plant that also gives us our cotton cloth.

Wesson Oil is made from cottonseed, refined and "Wessonized" by a process invented by Dr. Wesson.

You will have to try it to realize how good it is and how cheap. We want to send you a big can of it—gallon size. Just ask us, and it will be sent you free. The Southern Cotton Oil Company, 90 West Broadway, New York.